



Electronic Red Light Safety Program 2020 Detailed Site Selection Process October 11, 2022

The process of selecting additional red-light enforcement camera locations to supplement the existing 101 monitored approaches at 46 intersections began in early 2020 and included an initial screening, a final ranking, and approach selection. This report describes the steps in the process and details the decisions made by DelDOT throughout the process.

DelDOT's Electronic Red Light Safety Program (ERLSP) uses red-light-running crash data to identify candidate intersections and monitor safety benefits to the traveling public at existing camera locations. This methodology allows the program to be safety data-driven, rather than revenue- or public request-driven. Annual reports continue to show a significant reduction in angle crashes at the existing ERLSP camera sites.

Initial Screening

For the 2020 site selection, statewide crash data for calendar year 2015 through 2019 was obtained from Delaware's Crash Analysis Reporting System (CARS). To select the crashes that were most likely to be red-light-running, the crash data was reduced to those crashes coded as "Primary Contributing Circumstance: Disregard Traffic Signal" or "Driver Action: Ran Red Light." This resulted in a list of 4,088 statewide crashes that then had location data cross-referenced to DelDOT's signal permit number database. For the initial screening, no crash information was reviewed, so inaccuracies in reported location and crash variables may cause initial crash totals to be imprecise. Of the 4,088 statewide crashes, 2,913 were matched with a DelDOT signal permit number, 777 occurred in the City of Wilmington and were assigned a Wilmington "permit number" (to provide the City of Wilmington information in support of their red light monitoring program), and 398 were not located near a signal and/or the location was unclear. The initial list of DelDOT signal permit numbers with total number of cross-referenced crashes is provided in **Appendix A**.

The initial list was then sorted by total crashes, and a preliminary ranking of 292 intersections with five or more cross-referenced crashes was created. Of these intersections, 40 were signals within the City of Wilmington and 37 were existing ERLSP camera locations. These 77 signals were removed from the analysis at this stage. **Appendix B** includes the preliminary ranking of intersections with five or more crashes. Additional site characteristics (constraints and history of improvements) of the remaining signals were not reviewed at this stage, in favor of reviewing all crash data prior to making decisions about an intersection's candidacy.

Final Ranking

Once the preliminary ranking list was established, full crash data analysis was performed on each candidate intersection beginning with the highest rank. At-fault movement was noted, when determined in the crash narrative, for each red-light-running crash. The analysis included:

- Reviewing each of the crashes from the initial data set to confirm location and crash type and identifying the at-fault movement
- Obtaining additional crash data from CARS of all crashes occurring at each candidate intersection over the five-year analysis period to identify any red-light-running crashes that were missed in the original data set
 - For this set of crash data, narratives for all reported crashes with "Manner of Impact: Angle, Front-to-front, or Sideswipe Opposite Direction" were read and reviewed for red light running

- Reading narratives of the 398 crashes in the original data set that did not appear to be referenced to a signalized intersection to identify any that were red-light-running crashes

To minimize unnecessary time spent on crash data review, a decision was made to only perform full crash data reviews at intersections with 8 or more cross-referenced crashes. This included intersections through preliminary rank 121 and resulted in 72 fully-analyzed intersections.

Because cameras are installed on an intersection approach, the at-fault information obtained through the crash data review was summarized by approach. A final ranking of candidate sites was created by ranking the sites by most red-light-running crashes by at-fault approach, with "ties" sub-ranked by total red-light-running crashes. There were 67 sites with four or more crashes on the highest at-fault approach and eight or more total intersection crashes. This ranked list is presented in **Appendix C**. A timeline of crashes was also provided to facilitate candidacy discussion.

Similarly, to evaluate the crash characteristics and monitored approaches of the existing ERLSP camera sites, five-year crash data was reviewed and ranked by highest at-fault approach. This list is included in **Appendix D**. This step was taken in the previous site selection processes as well so that DeIDOT could analyze existing sites for potential additional approach monitoring.

Site Selection Meeting – January 6, 2021

WRA met with DeIDOT staff to present the final rankings of candidate intersections, discuss the site selection process, and determine a list of candidate intersections to provide to Conduent, DeIDOT's red-light camera contractor, to begin video validation. Minutes of this meeting are included as **Appendix E**. Only one site was eliminated as a candidate intersection at this stage for reasons described below:

- Rank 4 – SR 273 EB (E Delaware Ave) at Academy St (N429T) [Newark]
 - The upcoming Delaware Avenue bikeway project will significantly alter signal operations and intersection layout. The bikeway project is scheduled for Fall 2022 completion, and the City of Newark was advised accordingly of the intersection's elimination.

Rank 18 represented the last candidate site with eight or more crashes by at-fault approach. Expanding the ERLSP monitoring by up to the 17 selected intersections was considered sufficient for the 2020 site selection process. Thus, sites ranked lower than 18 were not considered for the program at this time. However, since some of the intersections with five to seven at-fault crashes also have a significant number of total angle crashes, it was suggested to review those sites further and consider other factors such as crash severity, total angle crashes, trends, and CY 2020 crashes to prioritize those sites for a potential "Phase 2" installation following confirmation of the 17 candidate "Phase 1" sites.

Potential additional monitoring at the existing 46 DeIDOT red light camera sites was also discussed. WRA provided a similar ranked list of crashes at the intersections over a five-year period organized by at-fault approach. Five locations had 5 or more red-light-running crashes on an approach that is not currently being monitored, which was the same threshold used on the candidate list for "Phase 2" new intersection monitoring. It was agreed that unmonitored approaches at these five intersections should be considered for monitoring.

All approaches at the 17 selected candidate intersections and selected additional approaches at 5 existing camera locations were submitted to Conduent for video validation – 16 hours (6 AM – 10 PM) of video monitoring of an approach to observe how many red-light-running violations are occurring at each location. The list of intersections and approaches submitted to Conduent are included in **Appendix F**.

During the video validation process, one additional site was eliminated due to constructability issues:

- Rank 13 – Harvey Rd at I-95 NB off-ramp (N324)
 - Due to the I-95 overpass (limited space), monitoring is not feasible on the EB approach.



Approach Selection

Conduent performed video validation throughout April 2021 to provide red-light-running violation data by approach and movement (left and through). Additionally, WRA performed site visits at all of the candidate locations to assess camera constructability and obtain signal timesheet calculation data to update all yellow and red intervals to DeIDOT's updated standard, where necessary. Summarized violation data, including a summary of crashes by at-fault approach, is provided in **Appendix G**. This document guided discussions of the monitored approach selection at a second meeting with DeIDOT staff.

"Phase 1" Monitored Approach Selection and "Phase 2" Site Selection Meeting – July 15, 2021

Based on violation data obtained by Conduent and field data obtained by WRA, DeIDOT selected which approaches to monitor at the 16 candidate intersections and which additional approaches to monitor at the 5 existing ERLSP sites. Minutes of this meeting are included as **Appendix H**. Additionally, all candidate sites had yellow and red intervals reviewed and timesheet packages were submitted to DeIDOT for implementation. DeIDOT's ERLSP program guidelines stipulate that to monitor an intersection, the highest at-fault red-light-running crash approach shall be monitored. It was agreed to proceed with monitoring at all 16 new "Phase 1" candidate intersections, summarized below:

Statewide Rank	Permit Number	Major Intersecting Road	Minor Intersecting Road	County or Town	Reviewing Agency	Proposed Monitored Movements		
						Directions	# of Cameras	# of Movements
Candidate Locations								
1	N634	US 202 SB	I-95 NB off-ramp	New Castle	DSP	SBT	1	1
2	K301	US 13	Old North Rd	Camden	Camden PD	SBT	1	1
3	K278	US 13	S Carter Rd / Pharmacy Dr	Smyrna	Smyrna PD	SBL, SBT	1	2
5	N486	US 40	Pleasant Valley Rd	New Castle	DSP	EBL, EBT, WBL, WBT	2	4
6	N150	SR 141 / SR 100 (Centre Rd)	SR 100 (Montchanin Rd)	New Castle	DSP	EBL, EBT, WBL, WBT	2	4
7	N561	US 13	Duck Creek Rd	Smyrna	Smyrna PD	NBL, NBT, SBL, SBT	2	4
8	N491	SR 41 (Newport Gap Pk)	Graves Rd	New Castle	DSP	SBL, SBT	1	2
9	K201	US 13	SR 1 ramps / Simon's Corner	Smyrna	Smyrna PD	NBL, NBT, SBL, SBT	2	4
10	N468	US 202	Prospect Ave	New Castle	DSP	NBL, NBT, SBL, SBT	2	4
11	K117	US 113	SR 14 (Milford Harrington Hwy / N Front St)	Milford	Milford PD	All	4	8
12	K175T	SR 14	Washington St	Milford	Milford PD	EBL, EBT, WBL, WBT	2	4
14	K132	US 113	Airport Rd / NW 10th St	Milford	Milford PD	NBL, NBT, SBL, SBT	2	4
15	S203	SR 1	Shuttle Rd (Rd 273D) / Sea Blossom Blvd	Sussex	DSP	NBL, NBT, SBL, SBT	2	4
16	N579	SR 141 (Powder Mill Rd)	Childrens Dr / Powder Mill Rd	New Castle	DSP	All	4	8
17	N397	SR 4 WB (Justis St)	Marshall St	Newport	Newport PD	NBL, NBT, WBT	2	3
18	N495	US 40	Brookmont Dr	New Castle	DSP	EBL, EBT, WBT	2	3



Additionally, monitoring was discussed for five of the existing 46 DelDOT red light camera sites that met similar at-fault crash total and violation rate thresholds as the candidate sites. It was agreed to add monitoring at additional approaches/movements at four of the five locations, as summarized below:

Existing Site Rank	Permit Number	Major Intersecting Road	Minor Intersecting Road	County or Town	Reviewing Agency	Proposed Monitored Movements		
						Directions	# of Cameras	# of Movements
Existing Locations								
2	N217	US 13	Boulden Blvd / Bacon Ave	New Castle	DSP	NBL	0	1
4	N239	US 40	SR 72	New Castle	DSP	All unmonitored	3	6
6	K265T	North St	Governors Ave	Dover	Dover PD	NBL, NBT	1	2
20	N272	SR 2	SR 100 (Dupont Rd)	Elsmere	Elsmere PD	No changes	0	0
21	K110	US 13	Lockerman St	Dover	Dover PD	SBL, SBT	1	2

A final summary document was prepared summarizing proposed monitoring locations, approach directions to be monitored, and area legislative representation. This summary is shown in **Appendix I**. In accordance with DelDOT’s ERLSP Intersection Selection Process, presented in **Appendix J**, prior to the installation of cameras at new intersections, the incumbent state senator and representative for the districts in which such locations are proposed were notified.

Finally, a list of “Phase 2” candidate sites for ERLSP monitoring was discussed, this list was based on analysis of the intersections from the final intersection rankings used at the January 6, 2021 meeting that had between five and seven at-fault crashes. During that meeting, it was suggested to review those sites further, considering other factors such as crash severity, total angle crashes, trends, and CY 2020 crashes to prioritize those sites since the difference between five, six, and seven at-fault crashes over 5 years is relatively minor. Following that meeting, 2020 data was reviewed for those sites, added to the 2015-2019 crash data, and a total crash severity score was calculated in the same manner used for HEP site selection.

Discussion of the individual locations on the list was cursory; however, the locations with additional notes and discussion are presented below. See end of **Appendix H** for the entire “Phase 2” candidate list.

- Rank 1 – SR 299 / Middletown Warwick Rd at SR 15 (Levels Rd) / SR 299 (Warwick Rd) (N726)
 - While there was a fatal crash at this location, making it top ranked by severity, traffic patterns changed significantly following the opening of the US 301 expressway. Volume through this intersection has dropped significantly and no angle crashes have occurred since the expressway opened in January 2019.
 - The group agreed to eliminate this intersection as a candidate location.

- Rank 3 – SR 7 at Milltown Rd & Milltown Rd at McKennans Church Rd (N233)
 - Though there will be difficulties monitoring this intersection, many improvements have been made over the years to try and alleviate the continuous crash problems, and yet it remains high on the candidate list with many recent crashes. Phasing has been adjusted, timings have been changed, overhead signs have been improved and repositioned, among other upgrades. Monitoring could provide another “step” in the ongoing stepwise approach to improving safety at this location. This location was also one of the five critical intersections identified on SR 7, SR 41, and SR 48 as part of Senate Resolution 10, so more innovative and larger-scale concepts are also in consideration.
 - The group agreed to keep this intersection as a candidate location.

- Rank 8 – Center Blvd / SR 1 NB ramps at Fashion Center Blvd / Road A (N538)
 - The long-term construction along Road A was noted and there is also a proposed phasing change to protected-only to address the southbound failure to yield angle crash problem.



Additionally, six of the crashes in the analysis were unable to be determined who was at fault, and many of those may be failure to yield left turns instead of red light running.

- The group agreed to eliminate this intersection as a candidate location.
- Rank 10 – SR 141 SB (Basin Rd) at Airport Rd (N325)
 - This signal will shortly be removed as the SR 141 Improvements project wraps up.
 - The group agreed to eliminate this intersection as a candidate location.
- Rank 23 – SR 896 (S College Ave) at Old Chestnut Hill Rd / W Chestnut Hill Rd (N435T)
 - The recent improvements at the intersection as a result of a fatal crash have been successful, and there have been no reported angle crashes since 2018.
 - The group agreed to eliminate this intersection as a candidate location.

Public Notification

Once the list of recommended monitored approaches was finalized, DelDOT requested concurrence from its ERLSP municipal partners in March 2021, while highlighting new municipal coordination aspects with Newport, Smyrna, Camden, and Milford. Additionally, DelDOT individually notified each of the corresponding state legislators with new red-light enforcement camera(s) in his or her district. As part of both the municipal and legislative outreach, DelDOT indicated that the current vendor agreement with Conduent expires in May 2023; therefore, the noted “Phase 1” and “Phase 2” ERLSP expansions would be folded into the procurement processes associated with DelDOT’s new ERLSP vendor agreement.

APPENDIX

A

**INITIAL Red Light Running Crashes by DeDOT Signal Permit Number
NEW CASTLE COUNTY**

Permit	Crash	Permit	Crash	Permit	Crash	Permit	Crash	Permit	Crash	Permit	Crash	Permit	Crash
N002P	0	N072P	0	N140	2	N200	2	N260	2	N321	1	N381	5
N003P	2	N073P	0	N141	5	N201	0	N261	10	N322	0	N382	5
N004P	0	N074P	0	N142	4	N202	0	N262	4	N323	6	N383	0
N005P	0	N080T	2	N143	2	N203	1	N263	2	N324	11	N384	4
N006P	4	N082P	0	N144	3	N204	1	N264	4	N325	12	N385	2
N007P	0	N083P	0	N145	1	N205	1	N265	0	N326	8	N386	0
N008P	11	N084P	0	N146	2	N206	1	N266	5	N327	1	N387	1
N009P	0	N085P	2	N147	2	N207	4	N267	1	N328	1	N388	2
N010P	0	N086P	0	N148	3	N208	2	N268	5	N329	0	N389	2
N011P	1	N087P	2	N149	0	N209	2	N269	3	N330	12	N390	7
N012P	0	N088P	4	N150	12	N210	0	N270	0	N331	5	N391	0
N013P	0	N089P	0	N151	0	N211	1	N271	20	N332	15	N392	1
N014P	2	N090P	2	N152	2	N212	3	N272	11	N333	6	N393	6
N015P	0	N091P	0	N153	12	N213	8	N273	0	N334	3	N394	1
N016P	0	N092P	0	N154	0	N214	2	N274	0	N335	3	N395	6
N017P	1	N093P	0	N155	0	N215	3	N275	0	N336	2	N396	1
N018P	0	N094P	0	N156	14	N216	8	N276	0	N337	4	N397	12
N019P	3	N095P	1	N157	5	N217	18	N277	1	N338	0	N398	2
N020P	0	N097P	2	N158	6	N218	3	N278	1	N339	4	N399	0
N021P	1	N098P	0	N159	5	N219	4	N279	0	N340	0	N400	0
N022P	0	N100	2	N160	9	N220	5	N280	0	N341	0	N401	0
N023P	1	N101	10	N161	0	N221	1	N281	6	N342	0	N402	0
N025P	0	N102	5	N162	0	N222	0	N282	2	N343	1	N403	1
N026P	2	N103	0	N163	6	N223	1	N283	1	N344	1	N404	0
N027P	0	N104	7	N164	5	N224	0	N284	0	N345	0	N405	4
N028P	9	N105	4	N165	8	N225	3	N285	7	N346	10	N406	5
N029P	0	N106	5	N166	0	N226	0	N286	3	N347	3	N407	4
N030P	1	N107	0	N167	4	N227	0	N287	1	N348	0	N408	7
N031P	1	N108	0	N168	13	N228	0	N288	17	N349	4	N409	8
N032P	0	N109	8	N169	0	N229	0	N289	6	N350	1	N410	1
N033P	0	N110	0	N170	4	N230	0	N290	6	N351	5	N411T	2
N034P	0	N111	0	N171	1	N231	2	N291	1	N352	6	N413T	1
N035P	9	N112	1	N172	3	N232	1	N292	0	N353	3	N414T	7
N036P	8	N113	0	N173	6	N233	14	N293	4	N354	0	N415T	0
N037P	0	N114	2	N174	2	N234	0	N294	0	N355	1	N416T	0
N038P	3	N115	0	N175	1	N235	2	N295	4	N356	5	N417T	0
N039P	0	N116	2	N176	7	N236	1	N296	1	N357	5	N418T	4
N040P	3	N117	2	N177	4	N237	2	N297	5	N358	5	N419T	0
N041P	6	N118	0	N178	1	N238	7	N298	4	N359	0	N420T	0
N042P	1	N119	0	N179	34	N239	19	N299	0	N360	1	N422T	10
N043P	0	N120	3	N180	0	N240	0	N300	1	N361	1	N423T	6
N044P	1	N121	0	N181	7	N241	0	N301	7	N362	1	N424T	5
N045P	0	N122	1	N182	12	N242	11	N302	0	N363	3	N425T	7
N046P	1	N123	3	N183	6	N243	1	N303	7	N364	6	N426T	1
N047P	1	N124	0	N184	1	N244	3	N304	0	N365	3	N427T	3
N048P	0	N125	1	N185	8	N245	12	N305	3	N366	4	N428T	2
N049P	0	N126	2	N186	5	N246	1	N306	6	N367	8	N429T	12
N050P	0	N127	8	N187	12	N247	2	N307	26	N368	0	N430T	6
N051P	0	N128	1	N188	5	N248	1	N308	1	N369	6	N431T	0
N052P	0	N129	1	N189	0	N249	0	N310	0	N370	0	N432T	2
N053P	0	N130T	0	N190	1	N250	0	N311	8	N371	3	N433T	0
N054P	0	N131	0	N191	12	N251	10	N312	15	N372	0	N434T	7
N055P	0	N132	4	N192	12	N252	4	N313	5	N373	2	N435T	8
N056P	1	N133	0	N193	8	N253	8	N314	0	N374	6	N436T	6
N057P	0	N134	0	N194	0	N254	7	N315	5	N375	0	N437	7
N058P	0	N135	0	N195	3	N255	6	N316	1	N376	0	N438T	2
N059P	0	N136	9	N196	0	N256	1	N317	11	N377	1	N439T	0
N060P	0	N137	2	N197	0	N257	1	N318	5	N378	3	N440T	0
N067P	0	N138	0	N198	6	N258	2	N319	0	N379	0	N441T	1
N071P	0	N139	1	N199	0	N259	1	N320	2	N380	0	N442T	4

**INITIAL Red Light Running Crashes by DeIDOT Signal Permit Number
NEW CASTLE COUNTY**

Permit	Crash	Permit	Crash	Permit	Crash	Permit	Crash	Permit	Crash	Permit	Crash
N443T	0	N507	0	N570	3	N634	28	N703T	5	N793	0
N444T	0	N508	0	N572	2	N635	2	N704	0	N794	0
N445T	0	N511T	0	N573	0	N636	4	N705	9	N805	0
N446T	2	N512	0	N574	3	N637	1	N706	6	N806	2
N448T	0	N513	3	N575	0	N638	0	N707	0	N807	0
N449T	0	N514	7	N576	2	N639	7	N708	1	N808	4
N450T	0	N515	1	N577	1	N640	1	N710	2	N809	0
N451T	1	N516	3	N578	0	N641	0	N711	0	N810	0
N452T	0	N517	1	N579	12	N642	0	N712	3	N811	2
N453	6	N518	0	N580	0	N643	3	N713	0	N812	0
N454	8	N519	2	N581	2	N644	0	N714T	0	N813	0
N455	0	N520	9	N582	0	N645	0	N715	11	N814	0
N456T	2	N521	5	N583	2	N646	7	N716	0	N816	0
N457T	0	N522	7	N584	0	N647	2	N717	0	N817	0
N458T	0	N523	5	N585	6	N648	0	N718	2	N818	0
N459T	1	N524	3	N587	1	N649	1	N719T	0	N819	0
N460	6	N525	3	N588	0	N650	0	N720	1	N820	4
N461	0	N526	2	N589	3	N651	1	N721	2	N821	0
N462	12	N527	0	N590	6	N653P	1	N722	0	N822	0
N464	7	N528	2	N591	2	N654	0	N723	0	N823	0
N465	6	N529	4	N592	0	N656	2	N724	0	N824	0
N466	2	N530	4	N593	0	N657	0	N725T	2	N825	1
N467T	4	N531	4	N594	2	N658	3	N726	10	N826	0
N468	13	N532	0	N595	5	N659	4	N727	3	N827	1
N469	1	N533	0	N596	7	N660	2	N729	0	N828	0
N470	1	N534	0	N597	3	N662	0	N730	0	N829	0
N471	4	N535	2	N598	2	N663T	1	N731	0	N830	0
N472	2	N536	0	N599	0	N669	0	N732	1	N831	0
N473	0	N537	0	N600	0	N670T	5	N733	0	N832	0
N474	1	N538	11	N601	0	N671	0	N734	1	N833	0
N475	3	N539	4	N602	0	N672	7	N735	0	N834	0
N476	4	N540	2	N603T	0	N673	0	N736	0	N835	0
N477	4	N541	5	N604	1	N674	1	N737	0	N836	0
N478	1	N542	0	N605T	9	N675	0	N738	0	N837	0
N479	4	N543T	0	N606	0	N676	9	N739	0	N838	0
N480	1	N544T	0	N607	0	N677	4	N740	0	N839	0
N481	3	N545	0	N608	0	N678	0	N741	8	N840	0
N482	3	N546	5	N609T	0	N680	0	N742	1	N841	0
N483	12	N547	2	N611	4	N681	0	N743	4	N842	0
N484	4	N548	1	N612	1	N682	0	N744	0	N843	0
N485	2	N549	0	N613	1	N683	0	N745	0	N845	0
N486	15	N550	0	N614	2	N684T	1	N767	0	N846	0
N487	0	N551	1	N615	0	N685T	4	N768	0	N847	0
N488T	1	N552	3	N616T	8	N686T	5	N769	1	N848	0
N489	4	N553	0	N617T	0	N687T	0	N770	0	N849	0
N490	6	N554	2	N618T	0	N688T	2	N771	0	N850	0
N491	14	N555	0	N619T	1	N689T	0	N772	8	N851	0
N492	4	N556	9	N620T	1	N690T	2	N773	0	N852	0
N493	0	N557	0	N621T	4	N691T	1	N774	1	N853	0
N494	2	N558	0	N622	0	N692T	0	N775	0	N854	0
N495	8	N559T	0	N623	0	N693T	5	N776	0		
N497	0	N561	13	N625	3	N694T	1	N780	0		
N499	0	N562	0	N626	7	N695T	2	N781	0		
N500T	3	N563T	4	N627T	37	N696T	1	N784	2		
N501	2	N564	1	N628	0	N697T	4	N787	0		
N502	0	N565	0	N629	1	N698	0	N788	0		
N503	4	N566	1	N630	2	N699	0	N789	0		
N504	2	N567	0	N631	0	N700	0	N790	0		
N505	0	N568	3	N632	0	N701	5	N791	5		
N506	3	N569T	0	N633	11	N702	1	N792	2		

INITIAL Red Light Running Crashes by DeIDOT Signal Permit Number

KENT COUNTY

Permit	Crash	Permit	Crash	Permit	Crash	Permit	Crash
K001P	2	K148	3	K220	1	K280	0
K002P	5	K150	0	K221	0	K281	0
K003P	0	K151	11	K222	0	K282	0
K004P	2	K152	4	K223	0	K283	0
K005P	7	K153	1	K224	5	K284	6
K006P	3	K154	2	K225	0	K285	0
K009P	6	K155	0	K226	0	K286	0
K014P	1	K156	0	K227	4	K287	6
K015P	2	K157	2	K228	0	K288	3
K016P	0	K158	0	K229	1	K289	2
K017P	0	K159	0	K230	2	K290	5
K018P	6	K160	0	K231	0	K291	2
K019P	0	K161	0	K232	0	K292	2
K101	5	K163T	1	K233T	0	K293	4
K102	8	K164T	4	K234	0	K294	2
K103	3	K166T	0	K235	0	K295	0
K104	1	K167T	1	K236	9	K296	0
K105	0	K168T	0	K237	0	K297	0
K106	6	K169	6	K238	0	K301	15
K107	5	K170T	3	K239	8	K302	4
K108	7	K171T	3	K240	1	K303	0
K109	1	K173T	0	K241	3	K304	1
K110	3	K174	5	K242	2	K306	0
K111	0	K175T	12	K243	5	K307	0
K112	7	K176T	6	K244	0	K308	0
K113	6	K177T	3	K245	0	K309	0
K114	2	K178	6	K246	1	K310	0
K115	0	K179T	0	K247	2	K311	0
K116	3	K180	6	K248	0	K312	0
K117	15	K181	1	K249	5	K313	0
K118	6	K182	0	K250	0	K315	0
K119	6	K183P	0	K251	1	K317	0
K120	3	K184	0	K252	0	K318	0
K121	3	K185	1	K253	0	K319	0
K122	2	K186	0	K254	0	K320	0
K123	9	K187	0	K255T	0	K321	0
K124	2	K188	10	K256T	1	K322	0
K125	6	K189	0	K257T	3	K323	0
K126	1	K190	0	K258T	3	K324	0
K127	0	K191	1	K259T	4	K325	0
K128	7	K192	0	K260T	1		
K129	0	K193	6	K261T	2		
K130	0	K194	3	K262T	5		
K131	3	K195	0	K263T	2		
K132	11	K196P	0	K264T	2		
K133	3	K197T	0	K265T	7		
K134	5	K198	5	K266T	1		
K135	6	K199	11	K267T	1		
K136	3	K200	0	K268T	0		
K137	9	K201	11	K269T	2		
K138	0	K202	2	K270T	1		
K139	0	K203	0	K271T	2		
K140	5	K204	0	K272	3		
K141	3	K205	0	K273	1		
K142	6	K206	0	K274T	0		
K143	0	K207	0	K275	0		
K144	0	K216	0	K276	0		
K145	1	K217T	5	K277	0		
K146	6	K218	0	K278	16		
K147	4	K219	0	K279	1		

**INITIAL Red Light Running Crashes by DeIDOT Signal Permit Number
SUSSEX COUNTY**

Permit	Crash	Permit	Crash	Permit	Crash	Permit	Crash	Permit	Crash
S001P	0	S151	4	S214	7	S285	0	S356	0
S002P	0	S152	0	S215	0	S286	1	S357	0
S007P	0	S153	0	S216	10	S287	0	S358	0
S008P	2	S154	0	S217	0	S290	0	S359	0
S013P	0	S155	0	S218	0	S291	1	S360	0
S027P	3	S156	0	S219	0	S292	0	S361	0
S029P	0	S157	0	S220	0	S293	0	S362	0
S031P	0	S158	0	S221	0	S294	0	S363	0
S035P	1	S159	0	S222	0	S295	0	S364	0
S036P	0	S160	9	S223	0	S296	1	S365	0
S037P	0	S161	1	S224P	0	S297	5	S366	0
S101	6	S162	6	S225	0	S298	0	S367	0
S102	3	S163T	0	S226	0	S299	0	S368	0
S103	8	S164T	0	S227	0	S300	5	S369	0
S104	1	S165T	2	S228	0	S301	0	S370	1
S105	4	S166T	0	S229	0	S302P	0	S371	0
S106	6	S167T	3	S230	0	S303	0	S372	0
S107	1	S168T	4	S231	0	S304	7	S373	0
S108	4	S169	0	S232	2	S305	0	S374	0
S109	10	S170T	1	S233T	0	S306	3	S375	0
S110	7	S171T	4	S234	4	S307	0	S376	0
S111	15	S172T	0	S235	2	S308	0	S377	0
S112	10	S173T	0	S236	7	S309	0	S378	0
S113	8	S174T	1	S237P	0	S310	0	S379	0
S114	3	S175T	2	S238	5	S311	0	S380	0
S115	3	S176T	2	S239	2	S312	0	S381	0
S116	4	S178T	0	S240	0	S313	0	S382	0
S117	0	S179T	0	S241	4	S314	6	S383	0
S118	4	S180	6	S242	0	S315	2	S384	0
S119	5	S181	0	S243	0	S316	0	S385	0
S120T	2	S182	0	S244	0	S317	0	S386	0
S121	12	S183	10	S245	0	S318	0	S387	0
S122	2	S184	1	S246	0	S319	0		
S123	0	S185T	1	S247	5	S320	0		
S124	4	S186T	1	S248	2	S321	3		
S125	9	S187T	0	S249	1	S324	1		
S126	4	S188	5	S250	6	S325	0		
S127	3	S189P	5	S251	0	S326	0		
S128	7	S190T	0	S260	0	S327	0		
S129	2	S191T	0	S261	0	S328	5		
S130	0	S192T	0	S262	0	S329	0		
S131	0	S193T	1	S263	0	S330	0		
S132	3	S194T	0	S264	0	S331	0		
S133	5	S195	6	S265	5	S332	1		
S134	5	S196	2	S266	0	S333	0		
S135	2	S197P	0	S267	0	S334	0		
S136	6	S199	8	S268	1	S338	2		
S137	0	S200	1	S269	3	S339	7		
S138	0	S202	2	S270	2	S340	0		
S139	5	S203	10	S271	0	S341	0		
S140	5	S204	10	S272	0	S343	0		
S141	6	S205P	0	S273	0	S344	0		
S143P	5	S206	3	S275	0	S345	0		
S144	4	S207	8	S278	0	S346	0		
S145	0	S208	0	S279	1	S347	1		
S146	0	S209	10	S280	0	S348	0		
S147T	1	S210	2	S281	0	S350	0		
S148	0	S211	0	S282	2	S351	3		
S149	0	S212	0	S283	2	S352	2		
S150	0	S213	3	S284	2	S354	0		

APPENDIX

B



**2020 Electronic Red Light Safety Program
Identification of Candidate Locations
February 11, 2020**

Legend			
	Candidate Intersection		To Be Determined
	Eliminate Intersection		Existing Camera Location

Statewide Rank	Permit Number	Major Intersecting Road	Minor Intersecting Road	County or City	Red Light Crashes ('15-'19)	Comments
1	N627T	Walnut St	Front St	Wilmington	37	
2	W212	N. Lincoln St	W. 2nd St	Wilmington	34	Future CoW Camera Location
3	N179	US 13	Memorial Dr / Hazeldell Ave	New Castle	34	Existing Camera Location
4	W138	N. Walnut St	E. 11th St	Wilmington	32	Future CoW Camera Location
5	N634	US 202 SB	I-95 NB off-ramp	New Castle	28	
6	N307	Adams St	11th St / I-95 SB off-ramp	Wilmington	26	Future CoW Camera Location
7	W220	W. 2nd St	N. Van Buren St	Wilmington	23	
8	N271	4th St	Jackson St / I-95 SB off-ramp	Wilmington	20	Future CoW Camera Location
9	N239	US 40	SR 72	New Castle	19	Existing Camera Location
10	N217	US 13	Boulden Blvd / Bacon Ave	New Castle	18	Existing Camera Location
11	W217	W. 2nd St	N. Broom St	Wilmington	18	Future CoW Camera Location
12	N288	SR 52 (Delaware Ave)	Jackson St	Wilmington	17	Future CoW Camera Location
13	K278	US 13	S Carter Rd / Pharmacy Dr	Smyrna / Kent	16	
14	N486	US 40	Pleasant Valley Rd	New Castle	15	
15	N332	US 40	Scotland Dr	New Castle	15	Existing Camera Location
16	N312	SR 4	Harmony Rd	New Castle	15	
17	K301	US 13	Old North Rd	Camden / Kent	15	
18	W221	W. 2nd St	N. Jackson St	Wilmington	15	Future CoW Camera Location
19	W198	N. Jackson St	W. 10th St	Wilmington	15	Future CoW Camera Location
20	K117	US 113	SR 14 (Milford Harrington Hwy / N Front St)	Milford	15	
21	S111	US 113	US 9 (W Market St)	Georgetown	15	
22	N491	SR 41 (Newport Gap Pk)	Graves Rd	New Castle	14	
23	N233	SR 7 (Limestone Rd)	Miltown Rd	New Castle	14	
24	N156	SR 141 / SR 100 (Centre Rd)	SR 48 / SR 100 (Lancaster Pk)	New Castle	14	
25	N561	US 13	Duck Creek Rd	Smyrna / New Castle	13	
26	N468	US 202	Prospect Ave	New Castle	13	
27	W222	W. 2nd St	N. Adams St	Wilmington	13	Existing Camera Location
28	N168	Centerville Rd	Boxwood Rd	New Castle	13	
29	N579	SR 141 (Powder Mill Rd)	Childrens Dr / Powder Mill Rd	New Castle	12	
30	N483	US 40	SR 896	New Castle	12	Existing Camera Location
31	N462	SR 72 (S Chapel St)	Kenmar Dr / Pencader Plaza	New Castle	12	Existing Camera Location
32	N429T	SR 273 EB (E Delaware Ave)	Academy St	Newark	12	
33	N397	SR 4 WB (Justis St)	Marshall St	Newport	12	
34	N330	US 13	SR 896 (Boyds Corner Rd) / Pole Bridge Rd	New Castle	12	
35	N325	SR 141 SB (Basin Rd)	Airport Rd	New Castle	12	
36	N245	US 13	SR 299 (Main St)	Odessa	12	
37	W211	N. Union St	W. 2nd St	Wilmington	12	Future CoW Camera Location
38	N192	SR 273 (Christiana Rd)	SR 7 (Bear Christiana Rd / E Main St)	New Castle	12	Existing Camera Location
39	N191	SR 58 (Churchmans Rd)	I-95 / SR 1 SB / SR 7 SB ramps	New Castle	12	Existing Camera Location
40	N187	US 40	Glasgow Ave	New Castle	12	
41	N182	SR 72 (S Chapel St / Sunset Lake Rd)	Old Baltimore Pk	New Castle	12	
42	K175T	SR 14	Washington St	Milford	12	
43	N153	Elkton Rd (SR 279 / SR 896)	Christina Pkwy (SR 4 / SR 896) / Suburban Plaza	Newark	12	Existing Camera Location
44	N150	SR 141 / SR 100 (Centre Rd)	SR 100 (Montchanin Rd)	New Castle	12	
45	S121	SR 1	US 9	Sussex	12	Existing Camera Location
46	N715	SR 299 (Middletown Warwick Rd)	Merrimac Ave	Middletown	11	
47	N633	US 40	Buckley Blvd	New Castle	11	
48	N538	Center Blvd / SR 1 NB ramps	Fashion Center Blvd / Road A	New Castle	11	
49	N324	Harvey Rd	I-95 NB off-ramp	New Castle	11	
50	N317	SR 2	Red Mill Rd / Polly Drummond Hill Rd	New Castle	11	Existing Camera Location
51	N272	SR 2	SR 100 (Dupont Rd)	Elsmere	11	Existing Camera Location
52	N242	SR 4	Salem Church Rd / SR 273 Connector	New Castle	11	Existing Camera Location
53	K201	US 13	SR 1 ramps / Simon's Corner	Smyrna	11	
54	K199	US 13	Scarborough Rd	Dover	11	Existing Camera Location
55	W171	W. 4th St	N. Lincoln St	Wilmington	11	Future CoW Camera Location
56	K151	US 13	Voshells Mill Rd / Voshells Mill Star Hill Rd	Camden / Kent	11	
57	K132	US 113	Airport Rd / NW 10th St	Milford	11	
58	N008P	US 13	School Ln / NCC Airport	New Castle	11	
59	N726	SR 299 / Middletown Warwick Rd	SR 15 (Levels Rd) / SR 299 (Warwick Rd)	Middletown / New Castle	10	
60	N422T	SR 2 / SR 72 (Capitol Tr)	Cleveland Ave / Woodlawn Ave	Newark	10	
61	N346	SR 4	SR 72 (S Chapel St)	New Castle	10	Existing Camera Location
62	N261	SR 7	Skyline Dr / Stoney Batter Rd	New Castle	10	
63	N251	SR 3 (Marsh Rd)	Washington St Ext	New Castle	10	
64	W250	MLK Blvd	N. Washington St / Justison St	Wilmington	10	
65	S216	US 13	Rd 534 (Tharp Rd / Herring Run Rd)	Seaford	10	Existing Camera Location
66	S209	US 113	SR 26 (Clayton St / Nine Foot Rd)	Dagsboro / Sussex	10	
67	S204	SR 1	Dartmouth Dr (Rd 268A)	Sussex	10	
68	S203	SR 1	Shuttle Rd (Rd 273D) / Sea Blossom Blvd	Sussex	10	
69	K188	SR 15 / W. North St	SR 15 (Saulsbury Rd) / POW/MIA Pkwy	Dover	10	
70	S183	US 113	SR 20 (Hardscrabble Rd) / Betts Pond Rd	Sussex	10	Existing Camera Location
71	W177	W. 4th St	N. Franklin St	Wilmington	10	
72	S112	US 113	SR 24 (Laurel Rd / Washington St)	Millsboro	10	
73	S109	US 13	SR 24 (Laurel Rd)	Sussex	10	
74	N101	US 202	SR 92 (Naamans Rd)	New Castle	10	Existing Camera Location
75	N705	US 301 (Middletown Warwick Rd)	Diamond State Blvd / S Ridge Ave	Middletown	9	
76	N676	SR 141 (Powder Mill Rd)	W Park Dr / US 202 SB off-ramp	New Castle	9	Existing Camera Location
77	N605T	Martin Luther King Jr Blvd	West St	Wilmington	9	



**2020 Electronic Red Light Safety Program
Identification of Candidate Locations
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Legend			
	Candidate Intersection		To Be Determined
	Eliminate Intersection		Existing Camera Location

Statewide Rank	Permit Number	Major Intersecting Road	Minor Intersecting Road	County or City	Red Light Crashes ('15-'19)	Comments
78	N556	SR 299 / Middletown Warwick Rd	SR 299 (W Main St) / SR 15 (Bunker Hill Rd)	Middletown	9	
79	N520	US 40	SR 1 SB ramps	New Castle	9	
80	W254	MLK Blvd	Market St	Wilmington	9	Future CoW Camera Location
81	W246	Lancaster Ave / MLK Blvd	Jackson St	Wilmington	9	Existing Camera Location
82	K236	US 13	Rustic Ln	Dover	9	
83	W227	W. 2nd St	N. Orange St	Wilmington	9	
84	W218	W. 2nd St	N. Franklin St	Wilmington	9	
85	N160	SR 41 (Newport Gap Pk)	Hercules Rd / Millcreek Rd	New Castle	9	
86	S160	US 113	SR 54 (Cemetery Rd)	Selbyville / Sussex	9	
87	K137	US 13	POW/MIA Pkwa (f.k.a. Charkes Polk Rd)	Kent	9	
88	N136	SR 896 (S College Ave)	Four Seasons Pkwy / Old Coochs Bridge Rd	New Castle	9	
89	S125	SR 1	SR 24 (John J Williams Hwy)	Sussex	9	
90	K123	US 13	SR 14 (Clark St / Milford Harrington Hwy)	Harrington	9	
91	W066	N. Market St	27th St	Wilmington	9	
92	N035P	US 40	Governors Square	New Castle	9	Existing Camera Location
93	N028P	US 202	Concord Mall (north) / Rocky Run Pkwy	New Castle	9	
94	N772	SR 7	School Bell Rd	New Castle	8	
95	N741	US 40	Glasgow Dr	New Castle	8	Existing Camera Location
96	N616T	Martin Luther King Jr Blvd	SR 4 (Maryland Ave) / Madison St	Wilmington	8	
97	N495	US 40	Brookmont Dr	New Castle	8	
98	N454	SR 896 (Summit Bridge Rd)	Porter Rd / Glasgow Ave	New Castle	8	
99	N435T	SR 896 (S College Ave)	Old Chestnut Hill Rd / W Chestnut Hill Rd	Newark	8	
100	N409	US 13	Rd 381 (Bear Rd / Hamburg Rd)	New Castle	8	
101	N367	SR 273 (Christiana Rd)	Chapman Rd / Eagle Run Rd	New Castle	8	
102	N326	SR 92 (Naamans Rd)	Peachtree Rd / Society Dr	New Castle	8	
103	N311	SR 3 (Marsh Rd)	Carr Rd	New Castle	8	
104	N253	Silverside Rd	Shipley Rd	New Castle	8	
105	W248	MLK Blvd	Monroe St	Wilmington	8	Future CoW Camera Location
106	K239	US 113	Buccaneer Blvd / Milford Airpark Plaza	Milford	8	
107	N216	SR 896 (Summit Bridge Rd)	SR 71 (Red Lion Rd) / Brennan Blvd	New Castle	8	
108	W214	W. 2nd St	N. Dupont St	Wilmington	8	
109	N213	SR 261 (Foulk Rd)	Shipley Rd	New Castle	8	
110	S207	SR 1	Munchy Branch Rd (Rd 270A) / Miller Rd (Rd 270B)	Sussex	8	Existing Camera Location
111	S199	US 113	Old Shawnee Rd / Johnson Ln	Milford	8	
112	N193	US 13 / SR 72 (Wrangle Hill Rd)	US 13 / SR 7 (Bear Corbitt Rd)	New Castle	8	
113	W186	W. 4th St	N. Orange St	Wilmington	8	Existing Camera Location
114	N185	US 40	SR 7 (Bear Corbitt Rd / Bear Christiana Rd)	New Castle	8	Existing Camera Location
115	N165	SR 2	SR 7 (Limestone Rd)	New Castle	8	Existing Camera Location
116	N127	Philadelphia Pk (US 13 Bus / SR 3)	SR 3 (Edgemoor Rd) / Shipley Rd	New Castle	8	
117	S113	US 113	SR 16 (Beach Hwy)	Sussex	8	
118	N109	US 202	Murphy Rd / Powder Mill Rd	New Castle	8	
119	S103	US 13	SR 404 (Seashore Hwy) / Main St (US 13 Bus / SR 404 Bus)	Bridgeville / Sussex	8	
120	K102	US 13	SR 300 (E Glenwood Ave) / Royal Farms	Smyrna	8	
121	N036P	SR 7 (Bear Christiana Rd)	Songsmith Dr	New Castle	8	
122	N672	US 40	Frazer Rd	New Castle	7	
123	N646	US 40	Lagrange Ave / Glasgow Park	New Castle	7	
124	N639	SR 896 (Elkton Rd)	Casho Mill Rd	Newark	7	
125	N626	US 40	Perch Creek Dr / Lagrange Pkwy	New Castle	7	
126	N596	SR 58 (Churchmans Rd)	SR 7 NB ramps / Geoffrey Dr	New Castle	7	Existing Camera Location
127	N522	SR 273 (Christiana Rd)	SR 1 SB ramps	New Castle	7	Existing Camera Location
128	N514	US 40	Wilton Blvd	New Castle	7	
129	N464	SR 4	Hygeia Dr	New Castle	7	
130	N437	SR 7	Brackenville Rd / Little Baltimore Rd	New Castle	7	
131	N434T	SR 896 (S College Ave)	Welsh Tract Rd	Newark	7	
132	N425T	SR 72 (Library Ave)	Wyoming Rd	Newark	7	
133	N414T	S Main St	Apple Rd	Newark	7	
134	N408	SR 58 (Churchmans Rd)	Continental Dr	New Castle	7	
135	N390	Red Mill Rd	Ruthar Dr	New Castle	7	
136	S339	US 113	College Park Ln	Georgetown	7	
137	S304	SR 404 (Seashore Hwy)	Bridgeville Center Rd / Tatman Farm Rd	Sussex	7	
138	N303	SR 141 (W Basin Rd)	SR 37 / Commons Blvd	New Castle	7	
139	N301	SR 2	Harmony Rd	New Castle	7	Existing Camera Location
140	N285	SR 2	Farrand Dr	New Castle	7	
141	K265T	North St	Governors Ave	Dover	7	Existing Camera Location
142	N254	SR 273 (Christiana Rd)	SR 58 (Churchmans Rd)	New Castle	7	
143	N238	Old Baltimore Pk	Ottis Chapel Rd	New Castle	7	
144	S236	SR 16 (Milton Ellendae Hwy)	SR 30 (Gravel Hill Rd / Isaacs Rd)	Sussex	7	
145	S214	US 13	Trussum Pond Rd (Rd 462)	Sussex	7	
146	W194	N. Jackson St	W. 6th St	Wilmington	7	
147	N181	SR 279 (Elkton Rd)	Ottis Chapel Rd	Newark / New Castle	7	
148	N176	Salem Church Rd	Chapman Rd / Oakdale Rd	New Castle	7	
149	K128	US 13	SR 10 (Camden Wyoming Ave / W Lebanon Rd)	Camden	7	
150	S128	US 13	SR 20 (Esbridge Hwy) / Beaver Dam Dr	Seaford	7	
151	W115	N. Washington St	W. 12th St	Wilmington	7	Existing Camera Location
152	K112	US 13	Martin Luther King Jr Blvd	Dover	7	
153	S110	US 113	SR 18 / SR 404 (Bridgeville Rd / Seashore Hwy)	Georgetown	7	
154	K108	US 13	Kentwood Dr / Cedar Chase Dr	Dover	7	



**2020 Electronic Red Light Safety Program
Identification of Candidate Locations
February 11, 2020**

Legend			
	Candidate Intersection		To Be Determined
	Eliminate Intersection		Existing Camera Location

Statewide Rank	Permit Number	Major Intersecting Road	Minor Intersecting Road	County or City	Red Light Crashes ('15-'19)	Comments
155	N104	US 202	Brandywine Blvd	New Castle	7	
156	W011	SR 52 (Pennsylvania Ave)	N. Franklin St	Wilmington	7	Existing Camera Location
157	K005P	US 13	Dover Mall (N Ent)	Dover	7	
158	N706	SR 4	Old Churchmans Rd	New Castle	6	
159	N590	SR 273 (Ogletown Rd)	Bala Rd / Red Mill Rd Connector	New Castle	6	
160	N585	US 13	Pine Tree Rd / Blackbird Landing Rd	New Castle	6	
161	N490	US 13	Sienni Blvd / Mallard Rd	New Castle	6	
162	N465	SR 4	Rolling Rd / Samoset Dr	New Castle	6	
163	N460	SR 273 (Christiana Rd)	Appleby Rd / Villas Dr	New Castle	6	
164	N453	US 13	Paddock Rd (Rd 30) / Joe Goldsborough Rd (Rd 487)	New Castle	6	
165	N436T	SR 4 / SR 896 (Christina Pkwy)	SR 896 (S College Ave)	Newark	6	Existing Camera Location
166	N430T	SR 273 EB (E Delaware Ave)	S Chapel St	Newark	6	
167	N423T	SR 2 / SR 72 (Library Ave / Capitol Tr)	SR 273 (Ogletown Rd) / E Main St	Newark	6	
168	N395	SR 4 WB (Justis St)	James St	Newport	6	
169	N393	US 40	Porter Rd / Salem Church Rd	New Castle	6	
170	N374	SR 2	Prices Corner	New Castle	6	
171	N369	SR 4	SR 58 (Churchmans Rd) / Delaware Park	New Castle	6	
172	N364	SR 2	Delaplaine Ave / Red Mill Connector	New Castle	6	
173	N352	SR 92 (Naamans Rd)	Carpenter Station Rd	New Castle	6	
174	N333	SR 2	Clifton Ave	New Castle	6	
175	N323	SR 3 (Marsh Rd)	I-95 SB ramps	New Castle	6	
176	S314	US 113	Town Centre Blvd	Sussex	6	
177	N306	Adams St	10th St	Wilmington	6	
178	N290	SR 58 (Churchmans Rd)	SR 37 (Airport Rd)	New Castle	6	
179	N289	SR 7	Telegraph Rd	New Castle	6	
180	K287	US 13	Lepore Rd	Dover	6	
181	K284	US 13	Lockmeath Way	Kent	6	
182	N281	SR 4	Gender Rd	New Castle	6	
183	N255	SR 4	Marrows Rd	New Castle	6	Existing Camera Location
184	S250	US 9	SR 23 Connector	Sussex	6	
185	W245	Lancaster Ave	Van Buren St	Wilmington	6	
186	W238	Lincoln St	Lancaster Ave	Wilmington	6	Existing Camera Location
187	W230	N. King St / MLK Blvd	E. 2nd St	Wilmington	6	
188	W229	N. Market St	2nd St	Wilmington	6	
189	N198	SR 4 (Maryland Ave)	Champlain Ave	New Castle	6	
190	S195	SR 1	Old Landing Rd	Sussex	6	Existing Camera Location
191	K193	US 113	N Walnut St / Warner Rd	Milford	6	
192	W185	W. 4th St	N. West St	Wilmington	6	
193	N183	US 13	SR 273	New Castle	6	
194	K180	SR 8	Independence Blvd	Dover	6	
195	S180	SR 1	Camelot Dr	Sussex	6	
196	W180	W. 4th St	N. Adams St	Wilmington	6	Existing Camera Location
197	K178	SR 8	Pearsons Corner Rd (Rd 101)	Kent	6	
198	K176T	SR 14 (Front St)	N Walnut St	Milford	6	
199	N173	SR 9 (New Castle Ave)	Memorial Dr / West Ave	New Castle	6	
200	W173	W. 4th St	N. Dupont St	Wilmington	6	
201	K169	US 13	College Rd / North Dover Center	Dover	6	
202	N163	SR 141 (Centre Rd)	SR 34 (Faulkland Rd)	New Castle	6	Existing Camera Location
203	S162	US 113	SR 20 (Dagsboro Rd / Rd 334) / Handy Rd (Rd 337)	Sussex	6	
204	W160	N. King St	E. 9th St	Wilmington	6	
205	N158	Lancaster Pk (SR 41 / SR 48)	SR 41 (Newport Gap Pk)	New Castle	6	
206	W150	N. King St	E. 11th St	Wilmington	6	
207	K146	SR 15 (Saulsbury Rd / McKee Rd)	Walker Rd	Dover	6	
208	K142	US 13	Delaware State University	Dover	6	
209	S141	SR 1	Postal Ln (Rd 283) / Melson Rd	Sussex	6	
210	S136	SR 1	SR 16 (Broadkill Rd)	Sussex	6	
211	K135	SR 10 (Lebanon Rd)	S State St	Kent	6	
212	K125	US 13	SR 12 (Midstate Rd / E Main St)	Felton / Kent	6	
213	K119	US 13	Smyrna Leipsic Rd / Belmont Ave	Smyrna / Kent	6	
214	K118	US 13	Webbs Ln	Dover	6	Existing Camera Location
215	K113	US 13	S State St	Dover / Kent	6	
216	K106	US 13	SR 42 (Main St / Fast Landing Rd)	Kent	6	
217	S106	US 13	SR 20 / Concord Road	Blades / Sussex	6	
218	S101	US 13	SR 16 (Market St)	Greenwood	6	
219	N041P	SR 48 (Lancaster Pk)	Barley Mill Plaza / Chestnut Run	New Castle	6	
220	K018P	SR 10 (Lebanon Rd)	Gateway South / Wawa	Kent	6	
221	K009P	US 113	Milford Square / The Plaza at Milford	Milford	6	
222	W007	SR 52 (Pennsylvania Ave)	N. Dupont St	Wilmington	6	
223	N791	US 13	SR 1 NB ramps (North Smyrna)	New Castle	5	
224	N703T	SR 299 (W Main St)	Industrial Dr	Middletown	5	
225	N701	SR 41 (Lancaster Pk)	Valley Rd	New Castle	5	
226	N693T	US 13 SB (S. Heald St)	A St	Wilmington	5	
227	N686T	4th St	Walnut St	Wilmington	5	Future CoW Camera Location
228	N670T	SR 299 (E Main St)	Cleaver Farm Rd / Dickenson Blvd	Middletown	5	
229	N595	SR 7 (Stanton Christiana Rd)	AAA Blvd / Border Café	New Castle	5	
230	N546	SR 7 (Road A)	SR 1 SB ramps	New Castle	5	
231	N541	US 40	Peoples Plaza	New Castle	5	



**2020 Electronic Red Light Safety Program
Identification of Candidate Locations
February 11, 2020**

Legend			
	Candidate Intersection		To Be Determined
	Eliminate Intersection		Existing Camera Location

Statewide Rank	Permit Number	Major Intersecting Road	Minor Intersecting Road	County or City	Red Light Crashes ('15-'19)	Comments
232	N523	SR 72 (Wrangle Hill Rd)	Fox Run Ct / Rue Madora	New Castle	5	
233	N521	SR 273 (Christiana Rd)	SR 1 NB ramps	New Castle	5	
234	N424T	SR 72 (Library Ave)	SR 273 EB (E Delaware Ave) / College Square	Newark	5	
235	N406	SR 58 (Churchmans Rd)	Christiana Hospital / Center Pointe Plaza	New Castle	5	
236	N382	Centerville Rd	Greenbank Rd	New Castle	5	
237	N381	Old Baltimore Pk	Salem Church Rd / Salem Woods Dr	New Castle	5	Existing Camera Location
238	N358	SR 2	Albertson Dr / Prices Corner Exit	New Castle	5	
239	N357	SR 4	MacArthur Dr / Hershey Run Dr	New Castle	5	
240	N356	SR 7 (Limestone Rd)	New Linden Hill Rd / Goldy-Beacom College	New Castle	5	
241	N351	SR 273 (Christiana Rd)	Old Baltimore Pk	New Castle	5	
242	N331	SR 92 (Naamans Rd)	Shipley Rd / Brandywine Town Center	New Castle	5	Existing Camera Location
243	S328	Plantation Rd	Postal Ln / Cedar Grove Rd	Sussex	5	
244	N318	SR 4	Stanton Rd	New Castle	5	
245	N315	SR 273 (Christiana Rd)	Brownleaf Rd	New Castle	5	
246	N313	SR 9 (New Castle Ave)	Cherry Ln / I-295 NB off-ramp	New Castle	5	
247	S300	SR 17 (Roxana Rd)	Burbage Rd	Sussex	5	
248	N297	SR 48 (Lancaster Pk)	Centerville Rd	New Castle	5	
249	S297	US 9	Whaleys Corner Rd (Rd 329) / Old Furnace Rd (Rd 46)	Sussex	5	
250	K290	US 13	Jerome Dr	Kent	5	
251	N268	SR 41 (Newport Gap Pk)	SR 34 (Faulkland Rd)	New Castle	5	
252	N266	SR 72 (Wrangle Hill Rd)	SR 71 (Red Lion Rd)	New Castle	5	
253	S265	SR 1	Jefferson Bridge Rd (Rd 361A)	Sussex	5	
254	K262T	State St	North St	Dover	5	
255	K249	SR 14 (Milford Harrington Hwy)	SR 15 (Canterbury Rd) / Holly Hill Rd	Milford / Kent	5	
256	S247	US 113	Rd 565 (Redden Rd / Deer Forest Rd)	Sussex	5	
257	W247	MLK Blvd	Adams St	Wilmington	5	
258	K243	Kenton Rd	W Denneys Rd	Dover / Kent	5	
259	W243	Lancaster Ave	Franklin St	Wilmington	5	
260	S238	US 13	SR 404 / E Newton Rd	Sussex	5	
261	K224	SR 15 (Hazletville Rd)	Mifflin Rd / Electric Ave	Dover	5	
262	N220	US 13	Lincoln Ave	New Castle	5	
263	K217T	North St	New St	Dover	5	
264	W215	W. 2nd St	N. Clayton St	Wilmington	5	
265	K198	SR 10 (W Lebanon Rd)	Old Mill Rd	Kent	5	
266	W197	N. Jackson St	W. 9th St	Wilmington	5	
267	S189P	SR 24 (John J Williams Hwy)	Rehoboth Mall	Sussex	5	
268	N188	SR 896 (S College Ave)	Old Baltimore Pk	New Castle	5	
269	S188	SR 24 (John J Williams Hwy)	Plantation Rd (SR 1D) / Warrington Rd (Rd 275)	Sussex	5	
270	N186	SR 2	Delaware Park Dr	New Castle	5	
271	K174	US 13	Irish Hill Rd (Rd 31) / E Evens Rd (Rd 32)	Kent	5	
272	N164	SR 62 (Newport Gap Pk f.k.a. "SR 41")	Old Capitol Tr	New Castle	5	
273	N159	SR 41 (Lancaster Pk)	Yorklyn Rd	New Castle	5	
274	N157	SR 48 (Lancaster Pk)	Hercules Rd	New Castle	5	
275	S143P	SR 1	Rehoboth Mall	Sussex	5	
276	N141	Silverside Rd	Veale Rd	New Castle	5	
277	K140	SR 8 (Forrest Ave / Forest St)	SR 15 (Saulsbury Rd)	Dover	5	
278	S140	SR 24 (John J Williams Hwy)	SR 5 (Oak Orchard Rd) / Mt Joy Rd (Rd 297)	Sussex	5	
279	W140	N. Walnut St	E. 9th St	Wilmington	5	
280	S139	US 9	SR 30 (Gravel Hill Rd)	Sussex	5	
281	K134	US 13	White Oak Rd / Kings Hwy	Dover	5	Existing Camera Location
282	S134	SR 1	Sea Air Ave / Seaside Outlet Dr	Sussex	5	
283	S133	US 113	Rd 207 (Johnson Rd / Fitzgeralds Rd)	Sussex	5	
284	S119	SR 1	Rehoboth Ave (SR 1A)	Sussex	5	
285	W119	N. Jefferson St	W. 12th St	Wilmington	5	
286	W117	N. Washington St	W. 8th St	Wilmington	5	
287	K107	US 13	N State St / Leipsic Rrd (Rd 88)	Dover	5	
288	N106	US 202	Concord Ave	New Castle	5	
289	N102	US 202	Silverside Rd	New Castle	5	Existing Camera Location
290	K101	US 13	SR 6 (Commerce St)	Smyrna	5	
291	W006	SR 52 (Pennsylvania Ave)	N. Lincoln St	Wilmington	5	Existing Camera Location
292	K002P	Bay Rd	Blue Hen Mall (north)	Dover	5	

APPENDIX

C



2020 Electronic Red Light Safety Program Identification of Candidate Locations January 6, 2021

Legend			
	Candidate Intersection		2018/2019 HEP Site
	Eliminate Intersection		2020 HEP Site

Statewide Rank	Permit Number	Major Intersecting Road	Minor Intersecting Road	County or City	Signal Phasing		RLR Crashes By At-Fault Approach								Maximum Crashes by At-Fault Approach	Total Angle Crashes (1/15-12/19)	Angle Crash Timeline	
							NB		SB		EB		WB					Unk./Other
					Left	Thru	Left	Thru	Left	Thru	Left	Thru						
1	N634	US 202 SB	I-95 NB off-ramp	New Castle	SB-Only Half Sig	One Way	0	0	0	25	0	0	0	0	11	25	36	
2	K301	US 13	Old North Rd	Camden / Kent	NB Prot-Only	T-Intersection	0	1	0	15	0	0	0	0	2	15	18	
3	K278	US 13	S Carter Rd / Pharmacy Dr	Smyrna / Kent	Prot-Only	Prot-Perm	0	4	0	12	0	0	0	0	1	12	17	
4	N429T	SR 273 EB (E Delaware Ave)	Academy St	Newark	One Way	SB Prot-Perm	0	0	0	2	0	12	0	0	0	12	14	
5	N486	US 40	Pleasant Valley Rd	New Castle	Prot-Only	Split	0	0	0	1	1	5	1	10	2	11	20	
6	N150	SR 141 / SR 100 (Centre Rd)	SR 100 (Montchanin Rd)	New Castle	Prot-Only	SB Prot-Perm	0	0	0	0	1	2	3	8	3	11	17	
7	N561	US 13	Duck Creek Rd	Smyrna / New Castle	Prot-Only	Split	1	3	2	9	0	0	0	0	0	11	15	
8	N491	SR 41 (Newport Gap Pk)	Graves Rd	New Castle	Prot-Perm	Split	0	2	0	11	0	0	0	0	2	11	15	
9	K201	US 13	SR 1 ramps / Simon's Corner	Smyrna	Prot-Only	Split	0	2	0	10	0	0	0	0	3	10	15	
10	N468	US 202	Prospect Ave	New Castle	Prot-Perm	Split	0	2	0	10	0	0	1	0	0	10	13	
11	K117	US 113	SR 14 (Milford Harrington Hwy / N Front St)	Milford	Prot-Only	Split	0	4	1	8	0	2	0	1	2	9	18	
12	K175T	SR 14	Washington St	Milford	Prot-Perm	Concurrent	0	1	0	0	0	9	0	2	3	9	15	
13	N324	Harvey Rd	I-95 NB off-ramp	New Castle	Lefts Prohibited	T-Intersection	2	0	0	0	0	9	0	1	2	9	14	
14	K132	US 113	Airport Rd / NW 10th St	Milford	Prot-Only	Split	0	9	0	3	0	0	0	0	0	9	12	
15	S203	SR 1	Shuttle Rd (Rd 273D) / Sea Blossom Blvd	Sussex	Prot-Only	Split	1	1	1	8	0	0	0	0	0	9	11	
16	N579	SR 141 (Powder Mill Rd)	Childrens Dr / Powder Mill Rd (11/3/17 RSAWF)	New Castle	Prot-Only	Prot-Only	0	1	4	4	0	2	0	5	2	8	18	
17	N397	SR 4 WB (Justis St)	Marshall St	Newport	One Way	One Way	0	4	0	0	0	1	0	8	1	8	14	
18	N495	US 40	Brookmont Dr	New Castle	EB Prot-Only	T-Intersection	0	0	1	0	0	0	0	8	1	8	10	
19	S111	US 113	US 9 (W Market St)	Georgetown	Prot-Only	Prot-Only	1	6	2	5	1	0	2	1	2	7	20	
20	N312	SR 4	Harmony Rd	New Castle	Prot-Only	Prot-Only	2	1	2	0	2	2	0	7	3	7	19	
21	N245	US 13	SR 299 (Main St)	Odessa	Concurrent	Prot-Perm	0	1	0	3	0	2	0	7	2	7	15	
22	K151	US 13	Voshells Mill Rd / Voshells Mill Star Hill Rd	Camden / Kent	Prot-Only	Split	2	3	3	4	0	1	0	0	1	7	14	
23	N325	SR 141 SB (Basin Rd)	Airport Rd	New Castle	One Way	Concurrent	0	0	0	7	0	5	0	0	1	7	13	
24	N705	SR 299 (Middletown Warwick Rd)	Diamond State Blvd / S Ridge Ave	Middletown	Prot-Only	Prot-Only	0	3	0	7	0	0	0	1	0	7	11	
25	N633	US 40	Buckley Blvd	New Castle	Prot-Only	Split	1	0	0	0	1	6	0	2	1	7	11	
26	S109	US 13	SR 24 (Laurel Rd)	Sussex	Prot-Only	Split	0	7	1	3	0	0	0	0	0	7	11	
27	N028P	US 202	Concord Mall (north) / Rocky Run Pkwy	New Castle	Prot-Only	Conc. Dbl .Left	0	2	1	6	1	0	1	0	0	7	11	
28	N626	US 40	Perch Creek Dr / Lagrange Pkwy	New Castle	Prot-Only	Split	0	1	0	0	0	7	0	1	1	7	10	
29	K239	US 113	Buccaneer Blvd / Milford Airpark Plaza	Milford	Prot-Only	Split	0	2	1	6	0	1	0	0	0	7	10	
30	K188	SR 15 / W. North St	SR 15 (Saulsbury Rd) / POW/MIA Pkwy	Dover	Prot-Perm	Split	0	0	0	0	0	1	0	7	1	7	9	
31	N136	SR 896 (S College Ave)	Four Seasons Pkwy / Old Coochs Bridge Rd	New Castle	Prot-Only	Split	1	1	1	6	0	0	0	0	0	7	9	
32	N216	SR 896 (Summit Bridge Rd)	SR 71 (Red Lion Rd) / Brennan Blvd	New Castle	Prot-Only	Split	0	0	0	7	0	0	0	0	1	7	8	
33	N168	Centerville Rd	Boxwood Rd	New Castle	SB Prot-Only NB Prot-Perm	EB Prot-Perm	1	5	1	0	0	4	0	2	1	6	14	
34	S112	US 113	SR 24 (Laurel Rd / Washington St)	Millsboro	Prot-Only	Prot-Only	3	2	0	6	1	0	0	1	1	6	14	
35	N726	SR 299 / Middletown Warwick Rd	SR 15 (Levels Rd) / SR 299 (Warwick Rd)	Middletown	Prot-Only	Prot-Only	1	5	1	3	0	0	1	1	1	6	13	
36	N187	US 40	Glasgow Ave	New Castle	Prot-Only	Split	0	1	0	5	0	6	0	1	0	6	13	
37	N008P	US 13	School Ln / NCC Airport	City of New Castle / New Castle County	Prot-Only	Split	0	6	3	2	0	1	0	0	1	6	13	
38	N520	US 40	SR 1 SB ramps	New Castle	WB Prot-Only	One Way	0	1	1	0	0	6	0	3	1	6	12	
39	S204	SR 1	Dartmouth Dr (Rd 268A)	Sussex	Prot-Only	Split	0	3	1	5	0	0	0	0	1	6	10	
40	K137	US 13	POW/MIA Pkwy (f.k.a. Charles Polk Rd)	Kent	NB Prot-Only	T-Intersection	2	1	0	6	0	0	0	0	1	6	10	
41	S103	US 13	SR 404 (Seashore Hwy) / Main St (US 13 Bus / SR 404 Bus)	Bridgeville / Sussex	Prot-Only	Prot-Perm	1	1	2	4	0	2	0	0	0	6	10	
42	N772	SR 7	School Bell Rd	New Castle	Prot-Perm	Split	0	6	0	1	0	0	0	0	1	6	8	



2020 Electronic Red Light Safety Program Identification of Candidate Locations January 6, 2021

Legend			
	Candidate Intersection		2018/2019 HEP Site
	Eliminate Intersection		2020 HEP Site

Statewide Rank	Permit Number	Major Intersecting Road	Minor Intersecting Road	County or City	Signal Phasing		RLR Crashes By At-Fault Approach								Maximum Crashes by At-Fault Approach	Total Angle Crashes (1/15-12/19)	Angle Crash Timeline	
							NB		SB		EB		WB					Unk./Other
					Left	Thru	Left	Thru	Left	Thru	Left	Thru						
43	N156	SR 141 / SR 100 (Centre Rd)	SR 48 / SR 100 (Lancaster Pk)	New Castle	Prot-Only	Prot-Only	1	4	1	3	0	5	0	4	1	5	19	
44	N233	SR 7 (Limestone Rd)	Milltown Rd	New Castle	Prot-Only	Prot-Only	0	5	2	2	1	3	2	0	3	5	18	
45	N182	SR 72 (S Chapel St / Sunset Lake Rd)	Old Baltimore Pk	New Castle	Prot-Only	Prot-Only	1	4	0	3	0	2	2	2	3	5	17	
46	N538	Center Blvd / SR 1 NB ramps	Fashion Center Blvd / Road A	New Castle	Prot-Perm	Prot-Only	0	1	1	1	1	1	2	3	5	5	15	
47	N330	US 13	SR 896 (Boyd's Corner Rd) / Pole Bridge Rd	New Castle	Prot-Only	Split	1	4	1	3	1	3	0	0	1	5	14	
48	N261	SR 7	Skyline Dr / Stoney Batter Rd	New Castle	Prot-Only	Split	0	5	0	4	1	0	0	0	3	5	13	
49	N435T	SR 896 (S College Ave)	Old Chestnut Hill Rd / W Chestnut Hill Rd	Newark	SB Prot-Perm NB Lefts Prohib.	Prot-Perm	0	5	0	0	0	3	0	1	1	5	10	
50	N109	US 202	Murphy Rd / Powder Mill Rd	New Castle	Prot-Only	Split	1	1	0	5	1	0	0	0	2	5	10	
51	K108	US 13	Kentwood Dr / Cedar Chase Dr	Dover / Kent	Prot-Only	Concurrent	1	4	1	1	0	0	1	0	2	5	10	
52	N556	SR 299 / Middletown Warwick Rd	SR 299 (W Main St) / SR 15 (Bunker Hill Rd)	Middletown	Prot-Only	Prot-Only	1	1	0	0	0	1	2	3	1	5	9	
53	N213	SR 261 (Foult Rd)	Shipleigh Rd	New Castle	Prot-Only	Prot-Perm	0	5	0	2	0	0	0	0	1	5	8	
54	N454	SR 896 (Summit Bridge Rd)	Porter Rd / Glasgow Ave	New Castle	Prot-Only	Prot-Only	0	4	1	1	0	1	3	1	0	4	11	
55	N715	SR 299 (Middletown Warwick Rd)	Merrimac Ave	Middletown	Prot-Only	Prot-Only	1	3	2	2	0	0	0	0	2	4	10	
56	S199	US 113	Old Shawnee Rd / Johnson Ln	Milford	NB FRA SB Lefts Prohib.	Split	1	3	0	4	0	1	0	0	1	4	10	
57	N160	SR 41 (Newport Gap Pk)	Hercules Rd / Millcreek Rd	New Castle	Prot-Perm	Prot-Perm	0	2	0	4	0	3	0	1	0	4	10	
58	N326	SR 92 (Naamans Rd)	Peachtree Rd / Society Dr	New Castle	Prot-Only	Prot-Only	0	1	0	0	0	2	0	4	2	4	9	
59	K236	US 13	Rustic Ln	Dover	Prot-Only	Conc. Lefts Only	1	2	0	4	0	1	1	0	0	4	9	
60	S209	US 113	SR 26 (Clayton St / Nine Foot Rd)	Dagsboro / Sussex	Prot-Only	Concurrent	0	4	1	1	0	1	1	1	0	4	9	
61	S160	US 113	SR 54 (Cemetery Rd)	Selbyville / Sussex	Prot-Only	Concurrent	0	4	1	3	0	0	0	0	1	4	9	
62	N127	Philadelphia Pk (US 13 Bus / SR 3)	SR 3 (Edgemoor Rd) / Shipley Rd	New Castle	Concurrent	Concurrent	0	1	0	4	0	2	0	1	1	4	9	
63	N367	SR 273 (Christiana Rd)	Chapman Rd / Eagle Run Rd	New Castle	Prot-Only	Prot-Only	0	1	0	0	0	2	0	4	1	4	8	
64	N251	SR 3 (Marsh Rd)	Washington St Ext	New Castle	Prot-Perm	Prot-Perm	0	2	0	0	0	1	0	4	1	4	8	
65	S125	SR 1	SR 24 (John J Williams Hwy)	Sussex	Prot-Only	T-Intersection	4	0	0	4	0	0	0	0	0	4	8	
66	K123	US 13	SR 14 (Clark St / Milford Harrington Hwy)	Harrington	Concurrent	Prot-Perm	0	2	0	1	1	3	0	1	0	4	8	
67	S113	US 113	SR 16 (Beach Hwy)	Sussex	Prot-Only	Split	0	3	3	1	0	1	0	0	0	4	8	

APPENDIX

D



2020 Electronic Red Light Safety Program Evaluation of At-Fault Crashes at Existing Camera Sites January 6, 2021

Legend			
■	Monitored Movement	■	2018/2019 HEP Site
◆	Angle Crash	■	2020 HEP Site
✖	Monitoring "go-live"		

Statewide Rank	Permit Number	Major Intersecting Road	Minor Intersecting Road	County or City	Signal Phasing		RLR Crashes By At-Fault Approach ¹										Maximum Crashes by At-Fault Approach	Total Angle Crashes (1/15-12/19) ²	Angle Crash Timeline
							NB		SB		EB		WB		Unk./Other				
					Left	Thru	Left	Thru	Left	Thru	Left	Thru							
1	N179	US 13	Memorial Dr / Hazeldell Ave	New Castle	Prot-Only / FRA	Split	1	26	1	2	0	1	2	0	8	27	41		
2	N217	US 13	Boulden Blvd / Bacon Ave	New Castle	Prot-Only	Split	9	5	3	4	0	1	0	1	0	14	23		
3	N462	SR 72 (S Chapel St)	Kenmar Dr / Pencader Plaza	New Castle	SB Prot-Perm	Split	0	10	0	4	0	0	0	0	0	10	14		
4	N239	US 40	SR 72	New Castle	Prot-Only	Prot-Only	6	2	1	2	0	1	1	3	7	8	23		
5	N317	SR 2	Red Mill Rd / Polly Drummond Hill Rd	New Castle	Prot-Only	Prot-Only	6	2	1	0	1	2	3	3	3	8	21		
6	K265T	North St	Governors Ave	Dover	Concurrent	Concurrent	0	8	0	1	0	0	0	1	0	8	10		
7	N483	US 40	SR 896	New Castle	Prot-Only	Prot-Only	1	1	0	2	5	2	0	5	2	7	18		
8	N332	US 40	Scotland Dr	New Castle	Prot-Only	Split	0	1	1	0	1	5	1	6	2	7	17		
9	N242	SR 4	Salem Church Rd / SR 273 Connector	New Castle	Prot-Only	Prot-Only	0	0	0	0	0	7	1	2	6	7	16		
10	S216	US 13	Rd 534 (Tharp Rd / Herring Run Rd)	Seaford	Prot-Only	Split	2	4	1	6	1	0	0	0	0	7	14		
11	N522	SR 273 (Christiana Rd)	SR 1 SB ramps	New Castle	Prot-Only	One Way	0	0	1	0	0	7	0	1	1	7	10		
12	N741	US 40	Glasgow Dr	New Castle	Prot-Only	Split	0	0	0	0	0	0	0	7	1	7	8		
13	N101	US 202	SR 92 (Naamans Rd)	New Castle	Prot-Only	Prot-Only	2	4	0	2	0	0	1	3	1	6	13		
14	N192	SR 273 (Christiana Rd)	SR 7 (Bear Christiana Rd / E Main St)	New Castle	Prot-Only	Split	0	2	0	0	0	2	0	6	2	6	12		
15	S183	US 113	SR 20 (Hardscrabble Rd) / Betts Pond Rd	Sussex	Prot-Only	Concurrent	0	3	1	5	2	1	0	0	0	6	12		
16	N301	SR 2	Harmony Rd	New Castle	Prot-Only	T-Intersection	0	0	0	0	0	6	0	1	0	6	7		
17	K199	US 13	Scarborough Rd	Dover	Prot-Only	Prot-Only	0	4	1	4	1	3	0	1	1	5	16		
18	N346	SR 4	SR 72 (S Chapel St)	New Castle	Prot-Only	Prot-Only	0	3	1	2	0	5	0	1	3	5	15		
19	N191	SR 58 (Churchmans Rd)	I-95 / SR 1 SB / SR 7 SB ramps	New Castle	Prot-Only	One Way	0	0	0	1	0	3	3	2	6	5	15		
20	N272	SR 2	SR 100 (Dupont Rd)	Elsmere	Prot-Perm	Prot-Perm	1	4	0	3	0	2	1	1	0	5	12		
21	K110	US 13	Loockerman St	Dover	Prot-Only	Split	0	0	0	5	0	1	0	2	2	5	10		
22	N676	SR 141 (Powder Mill Rd)	W Park Dr / US 202 SB off-ramp	New Castle	Prot-Perm	Prot-Only	0	0	0	0	0	5	0	2	2	5	9		
23	N596	SR 58 (Churchmans Rd)	SR 7 NB ramps / Geoffrey Dr	New Castle	Prot-Only	One Way	0	0	0	0	1	3	0	5	0	5	9		
24	S195	SR 1	Old Landing Rd	Sussex	Prot-Only	T-Intersection	0	1	0	5	0	1	0	0	1	5	8		
25	N153	Elkton Rd (SR 279 / SR 896)	Christina Pkwy (SR 4 / SR 896) / Suburban Plaza	Newark	Prot-Only	Prot-Only	0	4	1	2	1	2	1	1	3	4	15		
26	N255	SR 4	Marrows Rd	New Castle	Prot-Only	Prot-Only	0	2	0	2	0	1	1	3	1	4	10		
27	N436T	SR 4 / SR 896 (Christina Pkwy)	SR 896 (S College Ave)	Newark	Prot-Only	Prot-Only	0	3	0	1	0	4	0	1	0	4	9		
28	N165	SR 2	SR 7 (Limestone Rd)	New Castle	Prot-Only	Prot-Only	0	2	0	1	0	4	2	0	0	4	9		
29	N331	SR 92 (Naamans Rd)	Shipley Rd / Brandywine Town Center	New Castle	Prot-Only	Thrus Prohibited	1	0	0	0	0	4	0	2	1	4	8		
30	K118	US 13	Webbs Ln	Dover	FRA	Split	0	0	0	4	0	2	0	0	0	4	6		
31	N721	SR 71 / SR 896 (Summit Bridge Rd)	Summit Village Shopping Centre / Shoppes of Mt. Pleasant	New Castle	Prot-Perm	Concurrent	0	0	0	4	0	1	0	0	0	4	5		
32	K134	US 13	Kings Hwy / White Oak Rd	Dover	Prot-Only	Split	1	3	0	1	0	0	0	0	0	4	5		
33	N006P	SR 58 (Churchmans Rd)	I-95 SB off-ramp	New Castle	Concurrent	One Way	0	0	1	0	0	0	0	4	0	4	5		



2020 Electronic Red Light Safety Program Evaluation of At-Fault Crashes at Existing Camera Sites January 6, 2021

Legend			
■	Monitored Movement	■	2018/2019 HEP Site
◆	Angle Crash	■	2020 HEP Site
✖	Monitoring "go-live"		

Statewide Rank	Permit Number	Major Intersecting Road	Minor Intersecting Road	County or City	Signal Phasing		RLR Crashes By At-Fault Approach ¹								Maximum Crashes by At-Fault Approach	Total Angle Crashes (1/15-12/19) ²	Angle Crash Timeline	
							NB		SB		EB		WB					Unk./Other
					Left	Thru	Left	Thru	Left	Thru	Left	Thru						
34	S121	SR 1	US 9	Sussex	Prot-Only	Lefts Prohibited	1	2	2	1	0	3	0	3	1	3	13	
35	S207	SR 1	Munchy Branch Rd (Rd 270A) / Miller Rd (Rd 270B)	Sussex	Prot-Only	Split	0	3	0	2	1	2	0	0	0	3	8	
36	N163	SR 141 (Centre Rd)	SR 34 (Faulkland Rd)	New Castle	Prot-Only	Prot-Only	1	2	0	2	0	3	0	0	0	3	8	
37	N035P	US 40	Governors Square	New Castle	Prot-Only	Split	1	0	0	0	0	3	1	2	0	3	7	
38	N337	SR 273 (Christiana Rd)	Harmony Rd / Gerald Dr	New Castle	Prot-Only	Split	0	0	0	0	0	1	1	2	1	3	5	
39	N040P	US 40	Eden Square	New Castle	Prot-Only	T-Intersection	0	0	0	0	0	3	0	1	1	3	5	
40	N381	Old Baltimore Pk	Salem Church Rd / Salem Woods Dr	New Castle	WB Prot-Only EB Prot-Perm	Split	0	0	0	0	0	3	0	0	1	3	4	
41	N218	US 13	Roosevelt Ave	New Castle	Lefts Prohibited	Thrus Prohibited	0	3	0	0	0	0	0	0	1	3	4	
42	N102	US 202	Silverside Rd	New Castle	Prot-Only	T-Intersection	0	3	0	0	0	0	0	0	1	3	4	
43	S269	US 13	Redden Rd (Rd 40)	Sussex	Prot-Only	EB Prot-Perm	1	1	0	1	1	1	0	0	0	2	5	
44	N162	SR 2	SR 41 (Newport Gap Pk)	New Castle	Prot-Only	Split	0	0	0	0	0	0	0	2	0	2	2	
45	K148	US 13	Roosevelt Ave	Dover	FRA	Concurrent	0	0	0	1	0	0	0	0	0	1	1	
46	K109	US 13	SR 8 (Division St)	Dover	Prot-Only	Split	0	1	0	0	0	0	0	0	0	1	1	

¹The locations below had red light cameras installed in the years 2016-2017; the 5-year crash analysis includes periods before and after camera installation

Statewide Rank	Permit Number	Intersection	County or City	Red Light Camera Installation Date	Crashes per Year Before Camera Installation	Crashes per Year After Camera Installation	Comments
1	N179	US 13 at Memorial Dr / Hazeldell Ave	New Castle	8/24/2016	11.5	6.6	
2	N217	US 13 at Boulden Blvd / Bacon Ave	New Castle	9/8/2016	4.2	4.8	7 NBL crashes post-monitoring, all saw WB signal heads
3	N462	SR 72 (S Chapel St) at Kenmar Dr / Pencader Plaza	New Castle	11/19/2016	2.1	3.2	
9	N242	SR 4 at Salem Church Rd / SR 273 Connector	New Castle	10/18/2016	2.2	3.7	
11	N522	SR 273 (Christiana Rd) at SR 1 SB ramps	New Castle	9/8/2016	2.4	1.8	
12	N741	US 40 at Glasgow Dr	New Castle	11/21/2016	1.6	1.6	
18	N346	SR 4 at SR 72 (S Chapel St)	New Castle	12/26/2016	3.5	2.7	
19	N191	SR 58 (Churchmans Rd) at I-95 / SR 1 SB / SR 7 SB ramps	New Castle	1/19/2017	4.4	2.0	
22	N676	SR 141 (Powder Mill Rd) at W Park Dr / US 202 SB off-ramp	New Castle	2/18/2017	2.8	1.0	
31	N721	SR 71 / SR 896 (Summit Bridge Rd) at Summit Village Shopping Centre / Shoppes of Mt. Pleasant	New Castle	2/22/2017	0.9	1.1	US 301 Expressway opening, Jan. 2019
33	N006P	SR 58 (Churchmans Rd) at I-95 SB off-ramp	New Castle	1/26/2017	1.0	1.0	New off-ramp signalized double right, Dec. 2020
34	S121	SR 1 at US 9	Sussex	11/8/2016	4.3	1.6	
36	N163	SR 141 (Centre Rd) at SR 34 (Faulkland Rd)	New Castle	3/18/2017	1.8	1.4	
37	N035P	US 40 at Governors Square	New Castle	10/10/2016	1.7	1.2	
39	N040P	US 40 at Eden Square	New Castle	9/15/2016	1.2	0.9	
42	N102	US 202 at Silverside Rd	New Castle	1/31/2017	0.5	1.0	

²Full calendar year 2020 crash evaluation/analysis will be performed as part of the CY20 Annual Report

APPENDIX

E



MEMORANDUM of MEETING

Date: January 13, 2021 **Update:** June 24, 2021

Date of Meeting: January 6, 2021

Time of Meeting: 1:30 PM

Meeting Location: Microsoft Teams – Virtual Meeting

Meeting Description: ERLSP Site Selection

CC: Attendees

Work Order Number: 32128-047

Project: Electronic Red Light Safety Program

Participants:

Name	Company	Email
Matt Buckley	WRA	mbuckley@wrallp.com
Peter Haag	DelDOT Traffic	peter.haag@delaware.gov
Mark Harbeson	DelDOT Traffic	mark.harbeson@delaware.gov
Shanté Hastings	DelDOT	shante.hastings@delaware.gov
Steve Harr	WRA	sharr@wrallp.com
Mark Luszczyk	DelDOT	mark.luszczyk@state.de.us
Chris Marsh	DelDOT TMC	chris.marsh@delaware.gov
Scott Neidert	DelDOT Traffic	scott.neidert@delaware.gov
Max Saintil	DelDOT Traffic	max.saintil@delaware.gov
Chris Sylvester	DelDOT Traffic	christopher.sylvester@delaware.gov
Don Weber	DelDOT TMC	don.weber@delaware.gov

The purpose of this meeting was to discuss the ERLSP candidate location selection process. The following is a summary of the discussions.

- Steve discussed the methodology for identifying candidate locations. The locations of over 4,000 statewide crashes with “Primary Contributing Circumstance: Disregard Traffic Signal” or “Driver Action: Ran Red Light” from January 2015 through December 2019 were geo-referenced to signals with DelDOT permit numbers. Locations were eliminated if they were maintained by the City of Wilmington or if red light camera enforcement was already present. For the remaining sites, police crash reports were reviewed for intersections with 8 or more red light running (RLR) crashes to determine the “at-fault” approaches. The final candidate list is sorted by the intersections with the highest at-fault approach crash totals (left plus through at-fault crashes). Field observations and yellow and red interval calculations were performed at the higher-ranked sites to check if any supplemental improvements should be considered with monitoring.
- Steve presented a preliminary review of the “initial” CY 2020 crash data alongside the “initial” 2015-2019 crash data geo-referenced by intersection; only one candidate location had more than four CY 2020 crashes referenced to it (US 13 at SR 10, Camden). Steve stated a full review of crash reports at that location would only lead to an equivalent “final” ranking somewhere between about Rank 45 and Rank 50. This cursory analysis suggests that full review and inclusion of CY 2020 statistics is unlikely to significantly alter the final rankings.

- Mark L. suggested setting up a meeting in February to further brief Shanté on the ERLSP (financials, contracts, engineering, etc.).
- Matt discussed general schedule and goals with the group. After the meeting, a final candidate list will be prepared and provided to Conduent so that video validation can commence (at or before the suggested February meeting with Shanté). Following video validation, summaries and final recommendations for monitored approaches will be prepared and shared with the group before the end of FY 2021. Conduent design and legislative outreach could then commence, with most or all installations completed by the end of CY 2021. Matt stated the last round of site selection (16 new locations / 51 cameras) and a round of rebuilds (also 51 cameras) suggested a program expansion of that magnitude is feasible to complete in a calendar year.
- Steve and Matt presented a list of the candidate intersections including a summary of the crashes by at-fault approach and a timeline of angle crashes at the intersection to aid discussion of potential effects of known changes during the study period (signal retimings, repaving, widening, etc.).
- **Rank 1 – US 202 SB at I-95 NB off-ramp (N634)**
 - Steve noted this location has a significant SB downgrade on the approach with an existing RED SIGNAL AHEAD WHEN FLASHING sign/beacons. However, the settings are in the process of being updated so the beacons begin flashing prior to the onset of the yellow interval. Video validation should occur after this change.
 - The group agreed to keep this intersection as a candidate location, proceeding with video validation on the SB approach.
- **Rank 2 – US 13 at Old North Rd (K301) [Camden]**
 - Mark stated this location is within the limits of the US 13 Widening and Camden Bypass projects. Matt stated that the monitoring contract requires the contractor to adjust/relocate their devices to accommodate projects.
 - Steve confirmed the red light running crashes were not clustered around the nearby school arrival time (when NB lefts are heavy) – most crashes occurred throughout the afternoon.
 - Matt noted a camera install at this location would bring in a new municipality to the ERLSP (Camden).
 - The group agreed to keep this intersection as a candidate location, proceeding with video validation on the SB approach.
- **Rank 3 – US 13 at S Carter Rd / Pharmacy Dr (K278) [Smyrna]**
 - The group agreed to keep this intersection as a candidate location, proceeding with video validation on the NB and SB approaches.
- **Rank 4 – SR 273 EB (E Delaware Ave) at Academy St (N429T) [Newark]**
 - Steve discussed the upcoming Delaware Avenue bikeway project, which will alter signal operations and intersection layout.
 - Mark L. stated the bikeway project is scheduled for Fall 2021 construction.
 - Don inquired if this location was an “experimental ped” location – where the pedestrian signals display the countdown flashing don’t walk interval through the yellow interval of the concurrent vehicular signal phase. Steve confirmed this is not a location with that operation and the peds time out at the beginning of yellow.
 - The group agreed to eliminate this intersection as a candidate location. Matt stated he would follow up with Lt. Aniunas at the City of Newark Police Department to update him.



- **Rank 5 – US 40 at Pleasant Valley Rd (N486)**
 - Steve stated it was unclear if the US 40 retiming in May 2019 had a positive or negative impact on crash trends. Some crashes did occur after the corridor retiming.
 - Steve noted that the EB and WB all-red intervals are currently set to 3.0 seconds. While they only “need” 2.0 seconds per the design guidelines, Mark L. confirmed that it would be appropriate to maintain the 3.0-second setting for future timesheet revisions due to the documented red-light-running crash problem.
 - The group agreed to keep this intersection as a candidate location, proceeding with video validation on the EB and WB approaches.
- **Rank 6 – SR 141 / SR 100 (Centre Rd) at SR 100 (Montchanin Rd) (N150)**
 - Matt suggested the curve on the EB SR 141 approach may be a factor and a RED SIGNAL AHEAD WHEN FLASHING sign should be considered, similar to the nearby installation at SR 141 at Childrens Dr.
 - Steve stated the WB approach was the highest at-fault approach, but the EB approach did have 3 at-fault crashes.
 - Don and Matt stated *selective* tree-trimming would help sight distance as well, particularly on the WB approach.
 - Mark L. agreed with pursuing the RED SIGNAL AHEAD WHEN FLASHING sign if selective tree trimming is insufficient as well as red light camera monitoring.
 - The group agreed to keep this intersection as a candidate location, proceeding with video validation on the EB and WB approaches (those posted as SR 141 NB and SB).
- **Rank 7 – US 13 at Duck Creek Rd (N561) [Smyrna]**
 - Matt stated the recent HEP project has recommended converting the SB passive warning beacons to an active RED SIGNAL AHEAD WHEN FLASHING warning.
 - The group also noted an upcoming sidewalk job and a study by JMT. High speeds were also discussed, and enhanced enforcement was recommended.
 - The group agreed to keep this intersection as a candidate location, proceeding with video validation on the NB and SB approaches.
- **Rank 8 – SR 41 (Newport Gap Pk) at Graves Rd (N491)**
 - Peter noted a recent RKK study at this location recommended converting SB passive warning beacons to an active RED SIGNAL AHEAD WHEN FLASHING warning.
 - The group agreed to keep this intersection as a candidate location, proceeding with video validation on the NB and SB approaches.
- **Rank 9 – US 13 at SR 1 ramps / Simon's Corner (K201) [Smyrna]**
 - The group agreed to keep this intersection as a candidate location, proceeding with video validation on the NB and SB approaches.
- **Rank 10 – US 202 at Prospect Ave (N468)**
 - The group agreed to keep this intersection as a candidate location, proceeding with video validation on the NB and SB approaches.
- **Rank 11 – US 113 at SR 14 (Milford Harrington Hwy / N Front St) (K117) [Milford]**
 - Mark L. noted that recent railroad crossing construction at the intersection is complete. A capital project (intersection improvements) will occur in approximately 2024.
 - The group agreed to keep this intersection as a candidate location, proceeding with video validation on all four approaches.



- **Rank 12 – SR 14 at Washington St (K175T) [Milford]**
 - Peter stated there is a possibility this signal is deactivated in favor of all-way stop control; however, this requires further discussions with the City of Milford.
 - Mark L. noted an upcoming TAP project will install the 4th crosswalk.
 - The group agreed to keep this intersection as a candidate location, proceeding with video validation on the EB and WB approaches.
- **Rank 13 – Harvey Rd at I-95 NB off-ramp (N324)**
 - Matt stated that due to the I-95 overpass (limited space), it is likely monitoring is not feasible on the EB approach.
 - Matt also stated that this would be a good location for an active warning device on the EB approach and suggested it could be placed within the large channelizing island west of the I-95 SB on-ramp intersection.
 - The group agreed to keep this intersection as a candidate location, proceeding with video validation on the EB approach, as well as specifically requesting a constructability assessment for a proposed camera.
- **Rank 14 – US 113 at Airport Rd / NW 10th St (K132) [Milford]**
 - The group agreed to keep this intersection as a candidate location, proceeding with video validation on the NB and SB approaches.
- **Rank 15 – SR 1 at Shuttle Rd (Rd 273D) / Sea Blossom Blvd (S203)**
 - Matt suggested waiting closer to spring (nearer to peak-season) for video validation.
 - Matt stated this location is a potential pilot location for “block the box” monitoring. Steve discussed that initial reviews of [Summer 2020](#) Miovision videos revealed only limited intersection blocking (predominantly NB when it occurred) – the other location (SR 1 at Postal Ln) video had more regular and significant SB blocking.
 - *Following the meeting, the SR 1 at Postal Ln videos were further analyzed. The videos were continuously recorded from July 23, 2020 to August 6, 2020 by DelDOT Traffic. It was noted that vehicles blocking the intersection on southbound SR 1 occurred regularly on Friday and Saturday afternoons, approximately between the hours of 10AM and 6PM. More intermittent blocking was recorded Sunday through Thursday during the hours of 11AM and 1PM. These periods coincide with peak southbound volumes and occupancies recorded from system loops at nearby intersections.*
 - *Congestion and queuing varies heavily along the SR 1 corridor between Five Points and SR 1A; therefore, all three existing camera sites along SR 1 (Five Points, Old Landing Rd, and Munchy Branch Rd) and any future candidate sites would be appropriate for additional safety and congestion countermeasures such as “block the box.”*
 - The group agreed to keep this intersection as a candidate location, proceeding with video validation on the NB and SB approaches.
- **Rank 16 – SR 141 (Powder Mill Rd) at Childrens Dr / Powder Mill Rd (N579)**
 - The group agreed to keep this intersection as a candidate location, proceeding with video validation on all four approaches.
- **Rank 17 – SR 4 WB (Justis St) at Marshall St (N397) [Newport]**
 - Matt noted a camera install at this location would bring in another new municipality to the ERLSP (Newport).
 - The group agreed to keep this intersection as a candidate location, proceeding with video validation on the NB and WB approaches.



- **Rank 18 – US 40 at Brookmont Dr (N495)**
 - Mark L. noted that this intersection is within the US 40 Widening project.
 - Similar to Rank 5, the group agreed that the existing 3.0-second all-red interval for EB and WB phases should remain.
 - The group agreed to keep this intersection as a candidate location, proceeding with video validation on the EB and WB approaches.

- Rank 18 was the last site to have 8 or more at-fault crashes on one approach; the selection resulted in 17 candidate locations with 35 potential monitored approaches, which the group agreed was an appropriate number to target for a CY 2021 installation considering the “group” of intersections with 7 at-fault crashes has 14 signals.
- Since some of the intersections with 5 to 7 at-fault crashes also have a significant number of total angle crashes, Peter and Mark L. suggested reviewing those sites further and looking at other factors such as crash severity, total angle crashes, trends, and CY 2020 crashes to prioritize those sites for a potential “Phase 2” installation following confirmation of the 17 candidate “Phase 1” sites.
- The group also reviewed crash data at the 46 intersections with existing monitoring. Steve presented a ranked list of those sites similar to the candidate sites. Any additional approaches recommended for analysis will have violation and volume data analyzed by Conduent similar to the selected candidate sites. Only a few sites had notable RLR crash clusters on unmonitored approaches; these are the sites discussed below:

- **Rank 2 – US 13 at Boulden Blvd / Bacon Ave (N217)**
 - Nine NB left-turn at-fault crashes (unmonitored).
 - Steve and Matt noted this was the only unmonitored movement at the intersection – Conduent was unable to monitor previously due to the geometry.
 - Steve also noted most of the NB left crashes were due to the drivers seeing the WB signal heads turn green.
 - Matt stated an upcoming HEP project will be rebuilding this intersection.
 - The group agreed to have Conduent check constructability in case their technologies or ability to work around the geometric issues have improved.
 - The group recommended the NB US 13 approach (left-turn movement) for video validation.
- **Rank 4 – US 40 at SR 72 (N239)**
 - Eight crashes on the NB approach (monitored), four crashes on WB approach (unmonitored), three crashes on SB approach (unmonitored); additionally, there were seven angle crashes where fault could not be determined.
 - The group recommended the SB, EB, and WB approaches for video validation.
- **Rank 6 – North Street at Governors Avenue (K265T)**
 - Eight crashes on the NB approach (unmonitored), one crash on the SB approach (monitored).
 - Steve and Matt noted that the NB approach was unable to be monitored previously due to site constraints.
 - The group agreed to have Conduent check constructability in case their technologies or ability to work around the geometric issues have improved.
 - The group recommended the NB Governors Ave approach for video validation.



- **Rank 20 – SR 2 at SR 100 (Dupont Rd) (N272)**
 - Five crashes on the NB approach (unmonitored), three crashes on SB approach (unmonitored), two crashes on EB approach (monitored), and two crashes on the WB approach (unmonitored).
 - Matt stated Elsmere has made multiple requests to either expand or decommission their program; prior crash and violation data did not support expansion at this intersection. Red light running crashes have increased in the last couple years, so the group agreed with performing validation on all approaches.
 - The group recommended all four approaches for video validation (including the monitored EB approach).
- **Rank 21 – US 13 at Loockerman St (K110)**
 - Five crashes on the SB approach (unmonitored) and one crash on the NB approach (monitored).
 - The group recommended the SB approach for video validation.
- Peter inquired if the crashes at existing ERLSP site **Rank 34 – SR 1 at US 9 (S121)** showed any notable changes following the upgrades to the WB receiving lanes. WRA will check the 2020 data and follow up.

The above is a memorandum of understanding between the parties regarding the topics discussed and the decisions reached. Any participants desiring to add to, or otherwise amend the minutes, are requested to put their comments in writing to the writer within seven (7) days; otherwise, the minutes will stand as written.



Steve Harr, PE, PTOE



APPENDIX

F



2021 Electronic Red Light Safety Program Video Validation Locations January 8, 2021

Statewide Rank	Permit Number	Major Intersecting Road	Minor Intersecting Road	County or Town	Conduent Video Validation Approaches	
					Directions	# of Approaches
Candidate Locations						
1	N634	US 202 SB	I-95 NB off-ramp	New Castle	SB	1
2	K301	US 13	Old North Rd	Camden / Kent	SB	1
3	K278	US 13	S Carter Rd / Pharmacy Dr	Smyrna / Kent	NB, SB	2
5	N486	US 40	Pleasant Valley Rd	New Castle	EB, WB	2
6	N150	SR 141 / SR 100 (Centre Rd)	SR 100 (Montchanin Rd)	New Castle	EB, WB (141)	2
7	N561	US 13	Duck Creek Rd	Smyrna / New Castle	NB, SB	2
8	N491	SR 41 (Newport Gap Pk)	Graves Rd	New Castle	NB, SB	2
9	K201	US 13	SR 1 ramps / Simon's Corner	Smyrna	NB, SB	2
10	N468	US 202	Prospect Ave	New Castle	NB, SB	2
11	K117	US 113	SR 14 (Milford Harrington Hwy / N Front St)	Milford	All	4
12	K175T	SR 14	Washington St	Milford	EB, WB	2
13	N324	Harvey Rd	I-95 NB off-ramp	New Castle	EB*	1
14	K132	US 113	Airport Rd / NW 10th St	Milford	NB, SB	2
15	S203	SR 1	Shuttle Rd (Rd 273D) / Sea Blossom Blvd	Sussex	NB, SB	2
16	N579	SR 141 (Powder Mill Rd)	Childrens Dr / Powder Mill Rd	New Castle	All	4
17	N397	SR 4 WB (Justis St)	Marshall St	Newport	NB, WB	2
18	N495	US 40	Brookmont Dr	New Castle	EB, WB	2
Existing Locations						
2	N217	US 13	Boulden Blvd / Bacon Ave	New Castle	NB (Left)*	1
4	N239	US 40	SR 72	New Castle	SB, EB, WB	3
6	K265T	North St	Governors Ave	Dover	NB*	1
20	N272	SR 2	SR 100 (Dupont Rd)	Elsmere	All	4
21	K110	US 13	Loockerman St	Dover	NB	1
					Total	45

*perform camera constructability / monitoring feasibility check

APPENDIX

G



**2020 Electronic Red Light Safety Program
Recommended Candidate Locations - Crash & Violation Data
April 30, 2021**

Statewide Rank	Major Intersecting Road	Minor Intersecting Road	County / Municipality	Signal Phasing		RLR Crashes By At-Fault Approach								Maximum Crashes by At-Fault Approach	Total Angle Crashes (1/15-12/19)	Violations (6AM - 10 PM)									
						NB		SB		EB		WB				Unk./ Other	NB		SB		EB		WB		Total
						Left	Thru	Left	Thru	Left	Thru	Left	Thru				Left	Thru	Left	Thru	Left	Thru	Left	Thru	
1	US 202 SB	I-95 NB off-ramp	New Castle	SB-Only Half Sig	One Way	0	0	0	25	0	0	0	0	11	25	36			0	33					33
2	US 13	Old North Rd	Camden	NB Prot-Only	T-Intersection	0	1	0	15	0	0	0	0	2	15	18			0	5					5
3	US 13	S Carter Rd / Pharmacy Dr	Smyrna	Prot-Only	Prot-Perm	0	4	0	12	0	0	0	0	1	12	17	4	4	20	44					72
5	US 40	Pleasant Valley Rd	New Castle	Prot-Only	Split	0	0	0	1	1	5	1	10	2	11	20					34	4	12	9	59
6	SR 141 / SR 100 (Centre Rd)	SR 100 (Montchanin Rd)	New Castle	Prot-Only	SB Prot-Perm	0	0	0	0	1	2	3	8	3	11	17					104	12	35	15	166
7	US 13	Duck Creek Rd	Smyrna	Prot-Only	Split	1	3	2	9	0	0	0	0	0	11	15	11	19	58	16					104
8	SR 41 (Newport Gap Pk)	Graves Rd	New Castle	Prot-Perm	Split	0	2	0	11	0	0	0	0	2	11	15	6	5	0	4					15
9	US 13	SR 1 ramps / Simon's Corner	Smyrna	Prot-Only	Split	0	2	0	10	0	0	0	0	3	10	15	66	26	15	15					122
10	US 202	Prospect Ave	New Castle	Prot-Perm	Split	0	2	0	10	0	0	1	0	0	10	13	3	18	8	12					41
11	US 113	SR 14 (Milford Harrington Hwy / N Front St)	Milford	Prot-Only	Split	0	4	1	8	0	2	0	1	2	9	18	21	6	4	20	2	3	16	57	129
12	SR 14	Washington St	Milford	Prot-Perm	Concurrent	0	1	0	0	0	9	0	2	3	9	15					4	29	2	15	50
14	US 113	Airport Rd / NW 10th St	Milford	Prot-Only	Split	0	9	0	3	0	0	0	0	0	9	12	12	21	6	23					62
15	SR 1	Shuttle Rd (Rd 273D) / Sea Blossom Blvd	Sussex	Prot-Only	Split	1	1	1	8	0	0	0	0	0	9	11	11	24	27	13	9	1	4	12	101
16	SR 141 (Powder Mill Rd)	Childrens Dr / Powder Mill Rd	New Castle	Prot-Only	Prot-Only	0	1	4	4	0	2	0	5	2	8	18	18	2	36	15	12	4	3	14	104
17	SR 4 WB (Justis St)	Marshall St	Newport	One Way	One Way	0	4	0	0	0	1	0	8	1	8	14	169	17					0	154	340
18	US 40	Brookmont Dr	New Castle	EB Prot-Only	T-Intersection	0	0	1	0	0	0	0	8	1	8	10					54	40	0	15	109
Existing 2	US 13	Boulden Blvd / Bacon Ave	New Castle	Prot-Only	Split	9	5	3	4	0	1	0	1	0	14	23	45	52							97
Existing 4	US 40	SR 72	New Castle	Prot-Only	Prot-Only	6	2	1	2	0	1	1	3	7	8	23			3	9	5	30	34	33	114
Existing 6	North St	Governors Ave	Dover	Concurrent	Concurrent	0	8	0	1	0	0	0	1	0	8	10	3	6							9
Existing 20	SR 2	SR 100 (Dupont Rd)	Elsmere	Prot-Perm	Prot-Perm	1	4	0	3	0	2	1	1	0	5	12	9	7	11	13			6	3	49
Existing 21	US 13	Loockerman St	Dover	Prot-Only	Split	0	0	0	5	0	1	0	2	2	5	10			11	34					45

LEGEND: highest at-fault crash approach, must be monitored approach cannot be monitored due to constructability issues approach is currently monitored



**2020 Electronic Red Light Safety Program
Recommended Candidate Locations - Crash & Violation Data
April 30, 2021**

Statewide Rank	Major Intersecting Road	Minor Intersecting Road	County / Municipality	Signal Phasing		RLR Crashes By At-Fault Approach								Maximum Crashes by At-Fault Approach	Total Angle Crashes (1/15-12/19)	Violations per MEV (6AM - 10 PM)								
						NB		SB		EB		WB				Unk./ Other	NB		SB		EB		WB	
						Left	Thru	Left	Thru	Left	Thru	Left	Thru				Left	Thru	Left	Thru	Left	Thru	Left	Thru
1	US 202 SB	I-95 NB off-ramp	New Castle	SB-Only Half Sig	One Way	0	0	0	25	0	0	0	0	11	25	36			0	4,157				
2	US 13	Old North Rd	Camden	NB Prot-Only	T-Intersection	0	1	0	15	0	0	0	0	2	15	18			0	253				
3	US 13	S Carter Rd / Pharmacy Dr	Smyrna	Prot-Only	Prot-Perm	0	4	0	12	0	0	0	0	1	12	17	1,417	344	15,244	3,576				
5	US 40	Pleasant Valley Rd	New Castle	Prot-Only	Split	0	0	0	1	1	5	1	10	2	11	20					14,395	368	30,151	882
6	SR 141 / SR 100 (Centre Rd)	SR 100 (Montchanin Rd)	New Castle	Prot-Only	SB Prot-Perm	0	0	0	0	1	2	3	8	3	11	17					37,223	1,286	46,543	1,275
7	US 13	Duck Creek Rd	Smyrna	Prot-Only	Split	1	3	2	9	0	0	0	0	0	11	15	87,302	1,930	45,242	1,565				
8	SR 41 (Newport Gap Pk)	Graves Rd	New Castle	Prot-Perm	Split	0	2	0	11	0	0	0	0	2	11	15	7,712	1,239	0	876				
9	US 13	SR 1 ramps / Simon's Corner	Smyrna	Prot-Only	Split	0	2	0	10	0	0	0	0	3	10	15	25,038	2,670	11,103	1,568				
10	US 202	Prospect Ave	New Castle	Prot-Perm	Split	0	2	0	10	0	0	1	0	0	10	13	4,491	1,020	22,535	631				
11	US 113	SR 14 (Milford Harrington Hwy / N Front St)	Milford	Prot-Only	Split	0	4	1	8	0	2	0	1	2	9	18	6,473	666	1,925	1,865	1,280	1,060	10,485	19,198
12	SR 14	Washington St	Milford	Prot-Perm	Concurrent	0	1	0	0	0	9	0	2	3	9	15					21,164	8,844	3,534	4,129
14	US 113	Airport Rd / NW 10th St	Milford	Prot-Only	Split	0	9	0	3	0	0	0	0	0	9	12	6,299	2,304	7,463	2,118				
15	SR 1	Shuttle Rd (Rd 273D) / Sea Blossom Blvd	Sussex	Prot-Only	Split	1	1	1	8	0	0	0	0	0	9	11	6,101	1,332	11,116	696	1,931	2,667	6,462	16,667
16	SR 141 (Powder Mill Rd)	Childrens Dr / Powder Mill Rd	New Castle	Prot-Only	Prot-Only	0	1	4	4	0	2	0	5	2	8	18	42,654	464	8,551	2,557	10,499	3,287	58,824	14,271
17	SR 4 WB (Justis St)	Marshall St	Newport	One Way	One Way	0	4	0	0	0	1	0	8	1	8	14	42,883	7,045					0	17,663
18	US 40	Brookmont Dr	New Castle	EB Prot-Only	T-Intersection	0	0	1	0	0	0	0	8	1	8	10					43,725	2,477	0	933
Existing 2	US 13	Boulden Blvd / Bacon Ave	New Castle	Prot-Only	Split	9	5	3	4	0	1	0	1	0	14	23	27,389	2,548						
Existing 4	US 40	SR 72	New Castle	Prot-Only	Prot-Only	6	2	1	2	0	1	1	3	7	8	23			1,652	2,779	3,940	3,425	18,743	3,702
Existing 6	North St	Governors Ave	Dover	Concurrent	Concurrent	0	8	0	1	0	0	0	1	0	8	10	5,837	2,003						
Existing 20	SR 2	SR 100 (Dupont Rd)	Elsmere	Prot-Perm	Prot-Perm	1	4	0	3	0	2	1	1	0	5	12	3,576	3,472	15,110	7,898			3,827	404
Existing 21	US 13	Lockerman St	Dover	Prot-Only	Split	0	0	0	5	0	1	0	2	2	5	10			9,442	1,658				

LEGEND:



highest at-fault crash approach, must be monitored



approach cannot be monitored due to constructability issues



approach is currently monitored

APPENDIX

H



MEMORANDUM of MEETING

Date: July 29, 2021

Date of Meeting: July 15, 2021

Time of Meeting: 11:00 AM

Meeting Location: Microsoft Teams – Virtual Meeting

Meeting Description: ERLSP Site Selection

CC: Attendees

Work Order Number: 32128-047

Project: Electronic Red Light Safety Program

Participants:

Name	Company	Email
Matt Buckley	WRA	mbuckley@wrallp.com
Peter Haag	DelDOT Traffic	peter.haag@delaware.gov
Steve Harr	WRA	sharr@wrallp.com
Shanté Hastings	DelDOT	shante.hastings@delaware.gov
Mark Luszcz	DelDOT	mark.luszcz@delaware.gov
Scott Neidert	DelDOT Traffic	scott.neidert@delaware.gov

The purpose of this meeting was to discuss the ERLSP program – upcoming vendor selection and site expansion based on the candidate list discussed at the January 6, 2021 meeting. The following is a summary of the discussions.

- Steve stated that the video validation had been completed at the selected sites and presented the violation summaries and final recommendations for monitored approaches. The group agreed to proceed with all 37 new approaches recommended (at 16 new intersections and expansion at 4 currently monitored intersections). Shanté said she would confirm with Secretary Majeski. See attachments for approved list of sites.
 - *Following the meeting, Shanté followed up via email to Scott and stated the Secretary concurs with the selection of the 37 new sites and they should be included in the upcoming RFP.*
- During the discussion of SR 1 at Shuttle Road (Rank 15), Shanté stated she had observed “blocking the box” the weekend of July 10 at the intersection – the eastbound left turn from Shuttle backed up through the intersection. Matt stated that this observation is a good example of why having the capability of block the box monitoring throughout the monitored SR 1 locations is beneficial since issues may appear in unexpected locations or movements.
 - *Following the meeting, Mark relayed to Matt that he would like to work with Conduent on establishing a Block the Box demo site along SR 1 in Summer 2022.*
- During the discussion of SR 4 WB at Marshall Street (Rank 17), Mark inquired how many of the violations were northbound left turns on red from the left lane (one-way street to one-way street). The group determined that these were still illegal movements due to the red arrow signal head, but Steve offered to provide the numbers from the video validation study after the meeting.
 - *Following the meeting, Steve emailed the group that 28 of the 169 northbound left-turn violations occurred from the center shared lane.*

- The group discussed the vendor selection process and RFP. Matt suggested that the RFP should state that the 102 existing cameras must be rebuilt and the 37 selected “Phase 1” locations must be built at the beginning of the new contract. Additionally, the “Phase 2” sites could be included as sites for the vendor to prepare for video validation at the beginning of the contract.
- Mark stated his goal would be to have the new agreement executed by May 2022, which would provide a year of overlap if a new vendor is selected or allow the current vendor, Conduent, ample time to prepare for the construction of the new sites/systems prior to the end date of the current agreement in May 2023. With that timeline, the plan would be to have the RFP ready to advertise in Fall 2021.
- The group discussed exactly how broad the RFP should be regarding the latest monitoring technology in addition to red light cameras (e.g., automated speed enforcement, “block the box” monitoring, etc.). Shanté said she would discuss with Secretary Majeski.
 - *Following the meeting, Shanté followed up via email to Scott and stated the Secretary agrees that the RFP should include ERLSP and “block the box” but not speed enforcement at this time.*
- Mark stated the ERLSP team needs to keep Project Development North & South in the loop once ERLSP plan development begins.
- Mark and Shanté suggested the ERLSP team begin compiling public-facing 2020 selection website materials once the list is approved by the Secretary. Matt noted that Legislative and municipal notifications occurred prior to the recent video validation.
- Steve presented a list of “Phase 2” candidate sites for ERLSP monitoring, and explained that this list was based on analysis of the intersections from the final intersection rankings used at the January 6, 2021 meeting that had 5 to 7 at-fault crashes. During that meeting, Peter and Mark suggested reviewing those sites further and looking at other factors such as crash severity, total angle crashes, trends, and CY 2020 crashes to prioritize those sites. Following that meeting, 2020 data was reviewed for those sites, added to the 2015-2019 crash data, and a total crash severity score was calculated in the same manner used for HEP site selection.
- Discussion of the individual locations on the list was cursory; however, the locations with additional notes and discussion are presented below. See attachments for the entire “Phase 2” candidate list.
- **Rank 1 – SR 299 / Middletown Warwick Rd at SR 15 (Levels Rd) / SR 299 (Warwick Rd) (N726)**
 - Steve noted that while there was a fatal crash at this location, making it top ranked by severity, traffic patterns changed significantly following the opening of the US 301 expressway. Volume through this intersection has dropped significantly and no angle crashes have occurred since the expressway opened in January 2019.
 - The group agreed to eliminate this intersection as a candidate location.
- **Rank 3 – SR 7 at Milltown Rd & Milltown Rd at McKennans Church Rd (N233)**
 - Steve and Matt acknowledged the difficulties of monitoring this intersection, but stated that many improvements have been made over the years to try and alleviate the continuous crash problems, and yet it remains high on the candidate list with many recent crashes. Phasing has been adjusted, timings have been changed, overhead signs have been improved and repositioned, among other upgrades. Monitoring could provide another “step” in the ongoing stepwise approach to improving safety at this location. This location was also one of the five critical intersections identified on SR 7, SR 41, and SR 48 as part of Senate Resolution 10, so more innovative and larger-scale concepts are also in consideration.
 - The group agreed to keep this intersection as a candidate location.



- **Rank 8 – Center Blvd / SR 1 NB ramps at Fashion Center Blvd / Road A (N538)**
 - Steve cited the long-term construction along Road A and the proposed phasing change to protected only to address the southbound failure to yield angle crash problem as reasons to eliminate this location as a candidate. Additionally, six of the crashes in the analysis were unable to be determined who was at fault, and many of those may be failure to yield left turns instead of red light running.
 - The group agreed to eliminate this intersection as a candidate location.
- **Rank 10 – SR 141 SB (Basin Rd) Airport Rd (N325)**
 - Mark confirmed this signal will shortly be removed as the SR 141 Improvements project wraps up.
 - The group agreed to eliminate this intersection as a candidate location.
- **Rank 23 – SR 896 (S College Ave) Old Chestnut Hill Rd / W Chestnut Hill Rd (N435T)**
 - Steve stated that the recent improvements at the intersection as a result of a fatal crash have been successful, and there have been no reported angle crashes since 2018.
 - The group agreed to eliminate this intersection as a candidate location.
- The group agreed that there was no need to “cut off” the list at an arbitrary number of sites or severity score, since it is likely that more crash data will be added prior to doing any final selections or recommendations for the “Phase 2” sites. All remaining sites on the list (through rank 36) were recommended to be kept as candidate locations.

The above is a memorandum of understanding between the parties regarding the topics discussed and the decisions reached. Any participants desiring to add to, or otherwise amend the minutes, are requested to put their comments in writing to the writer within seven (7) days; otherwise, the minutes will stand as written.



Steve Harr, PE, PTOE

Attachments (2):
2020 ERLSP Site Selection Phase 1 Selected Sites
2020 ERLSP Site Selection Phase 2 Study Site Rankings





2021 Electronic Red Light Safety Program Recommended Locations for Monitoring July 15, 2021

Statewide Rank	Permit Number	Major Intersecting Road	Minor Intersecting Road	County or Town	Reviewing Agency	Proposed Monitored Movements			
						Directions	# of Cameras	# of Movements	
Candidate Locations									
1	N634	US 202 SB	I-95 NB off-ramp	New Castle	DSP	SBT	1	1	
2	K301	US 13	Old North Rd	Camden	Camden PD	SBT	1	1	
3	K278	US 13	S Carter Rd / Pharmacy Dr	Smyrna	Smyrna PD	SBL, SBT	1	2	
5	N486	US 40	Pleasant Valley Rd	New Castle	DSP	EBL, EBT, WBL, WBT	2	4	
6	N150	SR 141 / SR 100 (Centre Rd)	SR 100 (Montchanin Rd)	New Castle	DSP	EBL, EBT, WBL, WBT	2	4	
7	N561	US 13	Duck Creek Rd	Smyrna	Smyrna PD	NBL, NBT, SBL, SBT	2	4	
8	N491	SR 41 (Newport Gap Pk)	Graves Rd	New Castle	DSP	SBL, SBT	1	2	
9	K201	US 13	SR 1 ramps / Simon's Corner	Smyrna	Smyrna PD	NBL, NBT, SBL, SBT	2	4	
10	N468	US 202	Prospect Ave	New Castle	DSP	NBL, NBT, SBL, SBT	2	4	
11	K117	US 113	SR 14 (Milford Harrington Hwy / N Front St)	Milford	Milford PD	All	4	8	
12	K175T	SR 14	Washington St	Milford	Milford PD	EBL, EBT, WBL, WBT	2	4	
14	K132	US 113	Airport Rd / NW 10th St	Milford	Milford PD	NBL, NBT, SBL, SBT	2	4	
15	S203	SR 1	Shuttle Rd (Rd 273D) / Sea Blossom Blvd	Sussex	DSP	NBL, NBT, SBL, SBT	2	4	
16	N579	SR 141 (Powder Mill Rd)	Childrens Dr / Powder Mill Rd	New Castle	DSP	All	4	8	
17	N397	SR 4 WB (Justis St)	Marshall St	Newport	Newport PD	NBL, NBT, WBT	2	3	
18	N495	US 40	Brookmont Dr	New Castle	DSP	EBL, EBT, WBT	2	3	
Existing Locations									
2	N217	US 13	Boulden Blvd / Bacon Ave	New Castle	DSP	NBL	0	1	
4	N239	US 40	SR 72	New Castle	DSP	All unmonitored	3	6	
6	K265T	North St	Governors Ave	Dover	Dover PD	NBL, NBT	1	2	
20	N272	SR 2	SR 100 (Dupont Rd)	Elsmere	Elsmere PD	No changes	0	0	
21	K110	US 13	Loockerman St	Dover	Dover PD	SBL, SBT	1	2	
Total								37	71



2020 Electronic Red Light Safety Program Identification of Candidate Locations - Phase 2 July 15, 2021

Legend			
	Candidate Intersection		2018/2019 HEP Site
	Eliminate Intersection		2020 HEP Site

Statewide Rank	Permit Number	Major Intersecting Road	Minor Intersecting Road	County or City	Signal Phasing		RLR Crashes By At-Fault Approach								Severity Score	Maximum Crashes by At-Fault Approach	Total Angle Crashes (1/15-12/20)	Angle Crash Timeline	
							NB		SB		EB		WB						Unk./Other
					Major	Minor	Left	Thru	Left	Thru	Left	Thru	Left	Thru					
1	N726	SR 299 / Middletown Warwick Rd	SR 15 (Levels Rd) / SR 299 (Warwick Rd)	Middletown	Prot-Only	Prot-Only	1	5	1	3	0	0	1	1	1	76.5	6	13	
2	N626	US 40	Perch Creek Dr / Lagrange Pkwy	New Castle	Prot-Only	Split	0	2	0	0	0	0	9	1	2	75.0	9	15	
3	N233	SR 7 (Limestone Rd)	Milltown Rd	New Castle	Prot-Only	Prot-Only	0	5	2	2	1	4	4	0	3	67.5	7	29	
	N405	Milltown Rd	McKennans Church Rd	New Castle	Prot-Perm	Split	0	2	0	0	0	2	0	3	1				
4	S111	US 113	US 9 (W Market St)	Georgetown	Prot-Only	Prot-Only	2	7	2	7	1	0	2	1	3	56.5	9	25	
5	N245	US 13	SR 299 (Main St)	Odessa	Concurrent	Prot-Perm	0	1	0	3	0	2	0	9	2	52.0	9	17	
6	N312	SR 4	Harmony Rd	New Castle	Prot-Only	Prot-Only	3	1	2	0	2	2	1	8	3	46.5	9	22	
7	N330	US 13	SR 896 (Boyd's Corner Rd) / Pole Bridge Rd	New Castle	Prot-Only	Split	2	5	1	3	1	3	0	0	1	44.0	7	16	
8	N538	Center Blvd / SR 1 NB ramps	Fashion Center Blvd / Road A	New Castle	Prot-Perm	Prot-Only	0	1	1	1	1	1	2	3	6	44.0	5	16	
9	N156	SR 141 / SR 100 (Centre Rd)	SR 48 / SR 100 (Lancaster Pk)	New Castle	Prot-Only	Prot-Only	1	4	1	3	0	5	0	4	1	43.5	5	19	
10	N325	SR 141 SB (Basin Rd)	Airport Rd	New Castle	One Way	Concurrent	0	0	0	8	0	5	0	0	1	42.0	8	14	
11	K239	US 113	Buccaneer Blvd / Milford Airpark Plaza	Milford	Prot-Only	Split	0	2	1	8	0	1	0	0	0	40.0	9	12	
12	N168	Centerville Rd	Boxwood Rd	New Castle	SB Prot-Only NB Prot-Perm	EB Prot-Perm	1	6	2	0	0	4	0	3	1	38.0	7	17	
13	N705	SR 299 (Middletown Warwick Rd)	Diamond State Blvd / S Ridge Ave	Middletown	Prot-Only	Prot-Only	0	3	0	7	0	1	0	1	0	36.5	7	12	
14	K188	SR 15 / W. North St	SR 15 (Saulsbury Rd) / POW/MIA Pkwy	Dover	Prot-Perm	Split	0	1	0	1	0	2	0	7	1	36.5	7	12	
15	K137	US 13	POW/MIA Pkwy (f.k.a. Charles Polk Rd)	Kent	NB Prot-Only	T-Intersection	2	1	0	7	1	0	0	0	1	36.5	7	12	
16	S112	US 113	SR 24 (Laurel Rd / Washington St)	Millsboro	Prot-Only	Prot-Only	3	2	0	8	1	1	0	1	2	35.5	8	18	
17	K128	US 13	SR 10 (Camden Wyoming Ave / W Lebanon Rd)	Camden	Prot-Only	Prot-Only	2	2	0	5	4	1	1	2	0	34.5	5	17	
18	S109	US 13	SR 24 (Laurel Rd)	Sussex	Prot-Only	Split	0	7	1	5	0	0	0	0	0	34.0	7	13	
19	N187	US 40	Glasgow Ave	New Castle	Prot-Only	Split	0	2	0	5	0	7	0	2	0	33.5	7	16	
20	K151	US 13	Voshells Mill Rd / Voshells Mill Star Hill Rd	Camden / Kent	Prot-Only	Split	2	5	3	4	0	1	0	0	1	33.5	7	16	
21	N028P	US 202	Concord Mall (north) / Rocky Run Pkwy	New Castle	Prot-Only	Conc. Dbl. Left	0	3	1	7	1	0	1	0	2	32.5	8	15	
22	N182	SR 72 (S Chapel St / Sunset Lake Rd)	Old Baltimore Pk	New Castle	Prot-Only	Prot-Only	1	4	0	3	1	2	2	2	3	32.0	5	18	
23	N435T	SR 896 (S College Ave)	Old Chestnut Hill Rd / W Chestnut Hill Rd	Newark	SB Prot-Perm NB Lefts Prohib.	Prot-Perm	0	5	0	0	0	3	0	1	1	31.0	5	10	
24	N520	US 40	SR 1 SB ramps	New Castle	WB Prot-Only	One Way	0	1	1	0	0	6	0	4	1	30.5	6	13	
25	N136	SR 896 (S College Ave)	Four Seasons Pkwy / Old Coochs Bridge Rd	New Castle	Prot-Only	Split	1	1	1	6	0	0	0	0	0	30.0	7	9	
26	N633	US 40	Buckley Blvd	New Castle	Prot-Only	Split	1	0	0	0	1	7	0	2	1	29.5	8	12	
27	S103	US 13	SR 404 (Seashore Hwy) / Main St (US 13 Bus / SR 404 Bus)	Bridgeville / Sussex	Prot-Only	Prot-Perm	1	1	2	5	0	2	0	0	1	29.5	7	12	
28	N109	US 202	Murphy Rd / Powder Mill Rd	New Castle	Prot-Only	Split	1	1	1	5	1	0	0	0	2	28.5	6	11	
29	K108	US 13	Kentwood Dr / Cedar Chase Dr	Dover / Kent	Prot-Only	Concurrent	1	5	1	1	0	0	1	0	2	28.5	6	11	
30	N261	SR 7	Skyline Dr / Stoney Batter Rd	New Castle	Prot-Only	Split	0	5	0	5	1	0	0	0	3	28.0	5	14	
31	N216	SR 896 (Summit Bridge Rd)	SR 71 (Red Lion Rd) / Brennan Blvd	New Castle	Prot-Only	Split	0	0	0	7	0	0	0	0	1	25.5	7	8	
32	S204	SR 1	Dartmouth Dr (Rd 268A)	Sussex	Prot-Only	Split	0	4	1	5	0	0	0	0	1	25.0	6	11	
33	N213	SR 261 (Foulk Rd)	Shipleigh Rd	New Castle	Prot-Only	Prot-Perm	0	6	0	2	1	0	0	0	1	24.0	6	10	
34	N556	SR 299 / Middletown Warwick Rd	SR 299 (W Main St) / SR 15 (Bunker Hill Rd)	Middletown	Prot-Only	Prot-Only	1	1	0	1	0	1	2	3	1	24.0	5	10	
35	N008P	US 13	School Ln / NCC Airport	City of New Castle / New Castle County	Prot-Only	Split	0	6	3	2	0	1	0	0	1	23.5	6	13	
36	N772	SR 7	School Bell Rd	New Castle	Prot-Perm	Split	0	6	0	2	0	0	0	0	1	19.5	6	9	

APPENDIX

I



2020 Electronic Red Light Safety Program Recommended Monitored Approaches - State Legislators March 8, 2021

Statewide Rank	Major Intersecting Road	Minor Intersecting Road	County / Municipality	Legislative Representation & District		Proposed Monitored Approaches
				Senate	House	
1	US 202 SB	I-95 NB off-ramp	New Castle	McBride (District 1) Sturgeon (District 4)	Chukwuocha (District 1) Brady (District 4)	SB
2	US 13	Old North Rd	Camden	Bonini (District 16) Paradee (District 17)	Yearick (District 34)	SB
3	US 13	S Carter Rd / Pharmacy Dr	Smyrna	Ennis (District 14) Lawson (District 15)	Carson (District 28)	SB
5	US 40	Pleasant Valley Rd	New Castle	Hansen (District 10)	Morrison (District 27)	EB, WB
6	SR 141 / SR 100 (Centre Rd)	SR 100 (Montchanin Rd)	New Castle	Sturgeon (District 4)	Brady (District 4)	EB, WB
7	US 13	Duck Creek Rd	Smyrna	Ennis (District 14)	Hensley (District 9) Spiegelman (District 11)	NB, SB
8	SR 41 (Newport Gap Pk)	Graves Rd	New Castle	Sturgeon (District 4)	Griffith (District 12) Smith (District 22)	SB
9	US 13	SR 1 ramps / Simon's Corner	Smyrna	Ennis (District 14)	Carson (District 28)	NB, SB
10	US 202	Prospect Ave	New Castle	Sturgeon (District 4) Gay (District 5)	Griffith (District 12)	NB, SB
11	US 113	SR 14 (Milford Harrington Hwy / N Front St)	Milford	Wilson (District 18)	Postles Jr. (District 33)	All
12	SR 14	Washington St	Milford	Wilson (District 18)	Postles Jr. (District 33)	EB, WB
14	US 113	Airport Rd / NW 10th St	Milford	Wilson (District 18)	Postles Jr. (District 33)	NB, SB
15	SR 1	Shuttle Rd (Rd 273D) / Sea Blossom Blvd	Sussex	Lopez (District 6)	Schwartzkopf (District 14)	NB, SB
16	SR 141 (Powder Mill Rd)	Childrens Dr / Powder Mill Rd	New Castle	Sturgeon (District 4)	Brady (District 4) Griffith (District 12)	All
17	SR 4 WB (Justis St)	Marshall St	Newport	Mantzavinos (District 7)	Williams (District 19)	NB, WB
18	US 40	Brookmont Dr	New Castle	Townsend (District 11) Pinkney (District 13)	Longhurst (District 15) Wilson-Anton (District 26)	EB, WB
Existing 2	US 13	Boulden Blvd / Bacon Ave	New Castle	Brown (District 2) Poore (District 12) Pinkney (District 13)	Cooke Jr. (District 16) Minor-Brown (District 17)	NB (add NBL monitoring)
Existing 4	US 40	SR 72	New Castle	Hansen (District 10) Poore (District 12)	Wilson-Anton (District 26) Morrison (District 27)	All unmonitored
Existing 6	North St	Governors Ave	Dover	Paradee (District 17)	Lynn (District 31) Bennett (District 32)	NB
Existing 20	SR 2	SR 100 (Dupont Rd)	Elsmere	Mantzavinos (District 7)	Mitchell Jr. (District 13)	No changes
Existing 21	US 13	Lockerman St	Dover	Paradee (District 17)	Lynn (District 31) Bennett (District 32)	SB

Summary

- 101 approaches presently monitored at 46 intersections
- Five additional approaches recommended for monitoring at the 46 existing sites
- 32 approaches recommended for monitoring at an additional 16 intersections
- Four potential new municipalities based on the 2020 site selection process

APPENDIX

J

Electronic Red Light Safety Program

Intersection Selection Process

January 26, 2016

Initial Screening

- 1) Intersections are first ranked (highest to lowest) by the total number of red-light running crashes by approach using the most recent five years of available crash data. Summary crash data is used (i.e., individual police reports are not reviewed during this step). This includes existing ERLSP intersections with approaches that are not currently monitored.
- 2) The following intersections are eliminated from further consideration during the current selection process:
 - a) Locations that were eliminated from consideration in prior years due to site constraints (see Step 5 below)
 - b) Locations where remedial improvements were installed during or after the crash study period that would reduce the potential for red-light running crashes (e.g., signal reconstruction or intersection improvements project)
- 3) Cameras are installed on an intersection approach; therefore, the top-ranked intersections (typically intersections with 5 or more red-light running crashes during the study period) identified in Steps 1 and 2 are then re-ranked (highest to lowest) by the highest number of “at-fault” crashes by approach based on a review of police reports.
- 4) The top-ranked intersections are evaluated to determine whether other types of engineering solutions could address the red-light running crashes.
 - a) If the engineering solutions can be implemented in a relatively short time period, they are implemented based on availability of funding and the intersection is eliminated from consideration during the current selection process.
 - b) If DeIDOT Traffic determines that the solutions cannot be implemented in a timely manner or may require a capital project, the intersection in question may still be considered for red light camera installation.
 - c) For all intersections under consideration, required yellow change and red clearance interval times are calculated and updated based on DeIDOT’s revised engineering practices which went into effect as of February 25, 2015 (*Traffic Design Manual - 2015 Edition* http://www.deldot.gov/information/pubs_forms/manuals/traffic_design/index.shtml).
- 5) Site visits are performed to determine whether it is feasible to install and operate ERLSP equipment at the remaining candidate intersections. Factors considered include:
 - a) Compatibility with site conditions/infrastructure

- b) Availability of right-of-way for ERLSP equipment
- c) Availability of clear lines of sight for camera perspectives
- d) Confirmation that no road construction or intersection upgrades that would disrupt the camera system are planned at the intersection in the near future

Final Screening

- 6) Actual violation data is collected (by the vendor) for the top intersections identified in the initial screening (Steps 1 – 5).
- 7) The violation data is reviewed by DeIDOT and compared to each intersection's red-light running crash data and a determination is made as to which approaches should be monitored based on the following:
 - a) The approach with the highest number of crashes by at-fault approach shall be monitored
 - b) Other approaches with a high frequency of red-light running crashes
 - c) High frequency of violations
 - d) Complementary movements (i.e., for approaches where the left-turn movement and the through movement share a stop line, both movements may be monitored)
- 8) In accordance with the authorizing legislation, prior to the installation of cameras at new intersections, the incumbent state senator and representative for the districts in which such locations are proposed shall be notified.